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LESIONS OF THE STOMACH*

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Organic lesions of the human stomach which can be recognized by x-ray methods of examination are not common among the patients who are referred each year because of leading symptoms or suspicious physical findings referable to the alimentary tract. During the past five years it has been our experience to have reported the entire absence of x-ray signs of upper gastrointestinal tract disease in a group of 10,000 individuals so examined. During this same interval of time we have recorded convincing x-ray signs of gastric neoplasm, the most commonly encountered form of gastric disease which can be recognized, in 572 patients, while gastric ulcer, devoid of the signs characteristic of associated neoplasm, has been observed in 336 individuals. Clearly demonstrable duodenal ulcers numbered 1944 or considerably more than gastric carcinoma and gastric ulcer combined.

At first glance one might be led to assume on the basis of statements such as these that the x-ray search for organic lesions responsible for gastric symptoms must be a dreary procedure, seldom punctuated with moments of clinical interest. Nothing could be further from the truth. The daily sessions in the fluoroscopic dark room, where gastrointestinal examinations are conducted, are as thrilling as any detective story and constitute an unending and ever-variable challenge to the diligence and the resourcefulness of the examiner. Conditions in the panorama which confronts the fluoroscopic observer are kaleidoscopic in character. The element of suspense is ever present for it is to be remembered that only persons in whose cases there exists some reason to suspect disease are subjected to this procedure. Bare figures for the frequency with which gastric neoplasm and gastric ulcer are encountered are misleading because in addition to these top ranking lesions, abnormalities of the esophagus and the upper portions of the small intestine, as well as a number of even less common gastric disorders, are constantly being sought for. The element of human interest is great because all patients, however blasé they seek to appear, are deeply concerned with the verdict to be rendered in their case, and more often than not their simulated unconcern is painfully transparent. Activities in the fluoroscopic room bring the roentgenologist very close indeed to his patient and provide an outlet for his sympathy for which there is little opportunity for expression in the reporting of film findings which constitutes a considerable part of his daily work.

While many of the functional and organic irregularities of the stomach are quickly and easily discoverable at the screen, past experiences warn the radiologist that deviations from the normal, even those of great significance, may be exceedingly difficult to demonstrate. The knowledge of this state of affairs provides a constant spur to concentrated effort with the result that interest never flags.

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Observations made in the fluoroscopic room dictate the extent and the nature of the supplementary filming which is desirable and when this has been completed the radiologist once more reviews each day's grist of patients, armed with a considerable amount of evidence relating to the status of the upper gastrointestinal tract. Whenever he feels the slightest doubt in his mind regarding the true situation in the case of any individual patient he is in duty bound to withhold opinion pending the introduction of additional evidence. Indeed if he is seriously determined to do the best work of which he is capable, it is no hardship for him to conduct the necessary re-examination.

If one enters upon the examination of each individual patient with too much detailed clinical information provided in advance, his versatility in running down each and every suspicion of abnormality observed at the fluoroscope suffers from lack of exercise and he will find his mind less receptive to the numerous possibilities which may be capable of correlation with the patient's symptoms and physical findings. With all due respect for the value of a carefully elicited medical history, every roentgenologist who has had any considerable experience in this field is fully aware of the fact that his findings may directly controvert the implications of that history and he is in duty bound to express whatever opinion he has to offer on the basis of his own findings rather than hearsay evidence, however attractive this may be.

In the hands of a roentgenologist whose experience in gastrointestinal diagnosis is wide, as judged by the number of his own mistakes which he has recognized, the accuracy of x-ray methods when applied to the search for organic gastric lesions is remarkably high. This fact, however, by no means implies that even the most experienced and expert x-ray diagnostician has ever achieved the coveted goal of complete infallibility.

GASTRIC ULCER

Gastric ulcers which stand out in bold relief along the middle and lower one-thirds of the lesser curvature, whether viewed at the screen or in supplementary roentgenograms, are childishly simple to recognize, particularly if they measure a quarter of an inch or more in diameter (fig. 1). Ulcers of the same general character and dimen-

Fig. 1. Sizeable benign gastric ulcer, lesser curvature.

sions are distinctly more difficult to detect if they happen to be located a sufficiently great distance anteriorly or posteriorly from the lesser curvature, in which case they are readily obscured by the excess of opaque material within the lumen of the stomach, but as a rule they can be found without serious difficulty when the stomach is compressed through the abdominal wall. Even though ulcers may present on the lesser curvature, their presence may be overlooked because of overlapping shadows of the extreme gastric cardia, a situation which is particularly common in stout or obese patients whose stomachs are located high in the abdomen. Minute ulcer craters are easily missed unless the examiner follows the practice of exploring every available square centimeter of stomach wall, using every device at his command. Unfortunately, perhaps, the size of the ulcer

bears little relationship to the severity of the symptoms with which it is associated, and it is therefore fully as important to recognize the small as well as the large.

Once the presence of ulceration of the various layers of the stomach wall has been demonstrated, interest centers upon the histologic characteristics of the lesion. While it is well known that somewhere in the neighborhood of five per cent of gastric ulcers, which have been subjected to microscopic study, show unmistakable signs of associated malignancy, the roengenologist knows full well that his relatively crude method of examination supplies few reliable criteria upon the basis of which malignant ulcers can be differentiated from those which are benign. Oftentimes the temptation is great to state that because a particular ulcer crater is somewhat irregular in outline, seems to burrow laterally into the layers of the stomach wall, or seems to be partially filled with nodules of tissue, or surrounded by elevations which protrude into the lumen in ragged fashion, that it is already associated with an actively growing neoplasm. Certainly it is true that he should maintain an alert lookout for any signs which may suggest neoplasm, but at the same time he should constantly remind himself that the signs upon which such opinions are based are far from reliable. By far the better course to follow is to admit the possibility of malignancy in any demonstrably ulcerating lesion and place his dependence upon the behavior of the lesion in judging its true character. The practice of subjecting all gastric ulcer patients to rigid bed rest and active medical management with re-examination in ten days to two weeks is the most logical method of dealing with this situation. The delay in the treatment of cancer is not great and in view of the average rate of development of gastric carcinoma it should not constitute a real hazard for the patient. The large majority of gastric ulcers will respond promptly if rigorously treated and virtual or complete disappearance of the roentgen signs may be expected in two or at most three weeks. We have observed complete disappearance in as little as seven days. If the ulcer crater is still visible at three weeks and if treatment has been carefully and rigorously supervised, it is good practice to insist upon surgical intervention. Although in our experience four out of five of the ulcers which have been surgically treated by partial gastric resection in accordance with this policy, have failed to show any microscopic evidence of underlying or associated carcinoma, the single case so uncovered fully justified the surgical intervention in the other four. It is nothing short of tragic to permit a patient to worry along with a recalcitrant ulcer for month after month only to discover in the end that inoperable cancer has been allowed to gain a foothold (fig. 2).

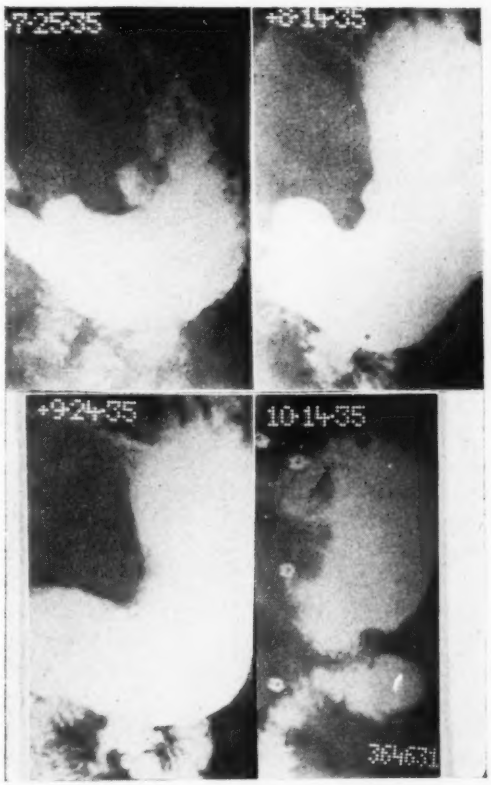

Fig. 2. Large gastric ulcer, progressive response to medical treatment. Minute carcinoma discovered at operation.

CARCINOMA OF STOMACH

The most frequently feared and encountered gastric lesion is carcinoma of the stomach. As in the case of gastric ulcer, these lesions are often recognizable with extreme ease because of the large size which they have attained before associated symptoms have sufficiently alarmed the patient to seek medical advice. This state of affairs is very discouraging because long term survival without recurrence of the disease is extremely uncommon, even in the face of rapid advances in gastric surgery. It is not necessary, however, for lesions to have attained great dimensions in order to produce characteristic roentgen signs which are very reliable. The fundamental feature of the deformity produced by gastric cancer is a persistent distortion of the barium column in the lumen of the stomach or in roentgenological parlance a "filling defect." Such deformities or filling defects may be small or large, rough or smooth in outline, and located at any point along the surface of the organ (fig. 3). It is not even necessary that the mucosal pattern of the stomach lining be visibly broken, for tumors which infiltrate widely throughout the walls of the stomach will reduce its normal pliability, thus preventing normal distention to accommodate gastric contents. The descriptive term "linitis plastica" is applied to lesions of this sort and the resultant deformity of the stomach is oftentimes profound (fig. 4). Benign polyposis of the stomach presents the characteristic finding of filling defect, but in this instance the defects are intragastric, characteristically smooth and rounded and sometimes demonstrably pedunculated. Although such lesions are benign in their incipiency, their proclivity for developing malignant characteristics is so well known that they should in every instance be removed by surgical means even if this requires complete gastric resection. This is one stage at which gastric carcinoma can be dealt with effectively in virtually every instance.

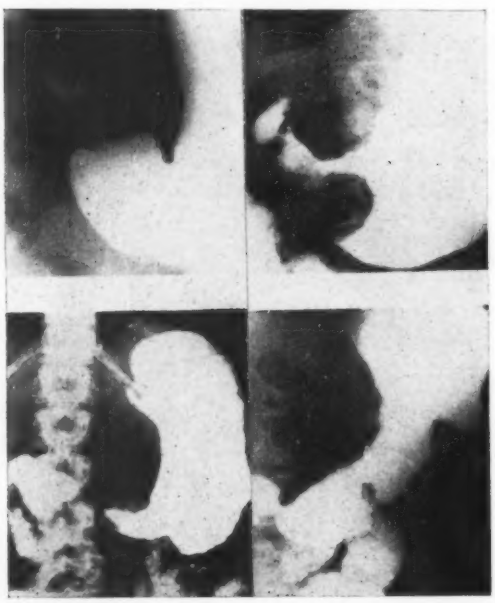

Fig. 3. Various expressions of gastric carcinoma.

Fig. 4. Linitis plastic; lowermost gastric segment uninvolved.

No recitation of the problems which confront the roentgenologist in running to earth the existence of gastric neoplasm should fail to include mention of the difficulties which are so prevalent when dealing with tumors which involve the extreme cardiac portion of the stomach and its environs. It is axiomatic that errors in roent-

gen diagnosis of gastric lesions at the pyloric end of the stomach are those of commission, whereas errors involving lesions at the cardiac end are dismal errors of omission. There are many reasons for this, chief among them the inaccessibility of this part of the stomach to the examiner's palpating hand. Good diagnosis at the screen depends to a very considerable extent upon manipulation through the abdominal wall to determine the degree of pliability of the gastric walls and to scrutinize the pattern of the mucosal surface. Many maneuvers of great ingenuity are used to increase the amount of stomach wall which can be brought under the control of the palpating hand, but none of these can succeed in rendering the extreme cardia accessible. Unless the screen observer is alert to the pitfalls which are common at the gastric inlet he may miss entirely the telltale signs of disease observable only at the first moment when opaque material is discharged from the esophagus into the gastric lumen. At this moment roughness of the gastric lining and irregularity of the gastric walls may often be quite apparent, only to become obscure as gastric filling progresses. It is highly important that the observer rivet his attention at the level of the diaphragm during the early stages of ingestion and that he rotate the patient until every possible aspect of the lowermost portion of the esophagus and the neighboring stomach have been brought into view. By changing the position of the patient from upright to horizontal, from recumbent to prone, and the various degrees of obliquity it may be possible to demonstrate obscure lesions with greater clarity.

Finally, it should be pointed out that situations other than gastric neoplasm may be responsible for perfectly obvious defects in gastric filling, unsuspected subphrenic abscesses on the left, food residues within the lumen, ingested non-opaque foreign bodies, gastric lues, and localized areas of hypertrophic gastritis, to mention but a few, must be considered by the roentgenologist when evaluating gastric filling defects (fig. 5).

All told the business of analyzing the status of the stomach of any individual even remotely suspected of harboring an intrinsic gastric lesion is a somewhat complicated one. If the examiner is sincerely devoted to his work, faithful in his diligence, and sufficiently experienced to have developed reliable judgment, x-ray examination offers a highly reliable method of study. It is always to be remembered, however, that the method is relatively crude, that unless tangible, persistent deformity of the stomach can be discovered the presence of gastric cancer cannot be honestly postulated. Some gastric carcinomas have been known to metastasize widely without producing lesions in the parent organ which are sufficiently deforming in character to rise above the threshold point of recognition by roentgen methods. The first few experiences with this type of lesion are embarrassing and discouraging but if one calls upon his store of philosophy he can sometimes discover equally embarrassing situations which must be borne by other members of his profession.

SUMMARY

By and large x-ray examination of the stomach has richly earned the position of

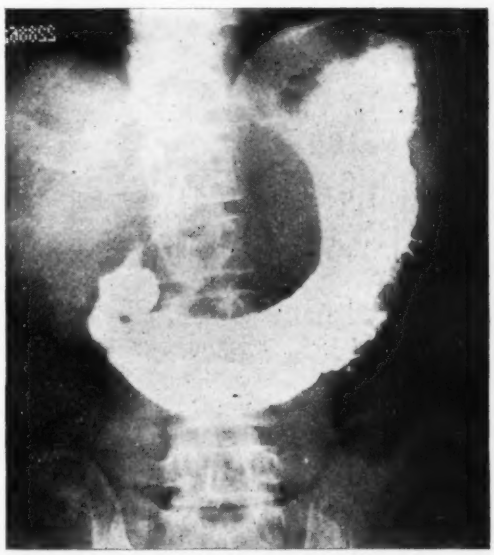

Fig 5. Localized hypertrophic gastritis, greater curvature.

competence which it enjoys in the estimation of internists and surgeons. The advent and increasing utilization of gastroscopy in the same field should be looked upon as a valuable means of confirming questionable lesions rather than a competitor in any sense of the word.

INFANTILE PARALYSIS*

ITS DESCRIPTION AND TREATMENT

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The great reluctance shown by some medical men in the United States of America in accepting the Kenny method of treatment for the disease known as infantile paralysis is based on their failure to realize that the understanding of this method of therapy requires a fundamental revision of the old concept of the nature of the disease. It was firmly embedded in the minds of the medical world that the only significant change in the muscles was partial or total flaccid paralysis resulting from damage or destruction by the virus of poliomyelitis to the motor neurons in the anterior horn of the spinal cord. The deformities were believed to be caused by the strong normal muscles pulling and stretching the weak paralyzed ones. In order to treat this condition, immobilizing supports were applied as soon as possible to retain the bodily alignment and to overcome shortening of the supposedly strong muscle and lengthening of the supposedly weak one. The latter muscle would be, as it was expressed, "put in a position of advantage" by shortening, and rigidly retained in this position through the entire convalescence with the exception of the treatment periods and, even during these periods, it was supposed to be unwise to leave off the supports on the one limb while the other was receiving attention. In many textbooks it was advised to leave the supports on the limbs while the patient was receiving pool treatment.

The old treatment was wrong because the old concept of the disease was wrong. While paralysis undoubtedly occurs from this acute infection, it is not in the majority of cases the most important damaging factor. The disorders of muscular physiology which occur in poliomyelitis and which have been almost entirely neglected by the medical profession include: (1) Muscle spasm; (2) mental alienation; and (3) muscle incoordination. The Kenny method is designed to treat these three disabling conditions and they can be relieved by this treatment. No effective treatment is available at present for paralysis resulting from destruction of anterior horn cells.

On consideration of the world wide acceptance of the old theory, the antagonism of the medical world to a radical change, to a treatment diametrically opposed to the procedure of immobilization, can well be understood. The complexity of the new concept of this disease, in addition to the fact that these symptoms had for so long a time gone unrecognized, delayed the acceptance of my contribution. That is why it is necessary for me to be present here today—and for me to visit the different parts of the earth and present my work. The prejudice against accepting a new treatment for poliomyelitis based on a new concept of the disease retarded the work in Australia for almost thirty years. I am happy to say that the medical profession in the United States of America has been quicker to discard old prejudices.

It has been stated that even with the use of immobilization, deformities did occur despite the best efforts of the orthopedic surgeon. Therefore, to present a treatment recommending the abandonment of this procedure and a routine treatment for muscle conditions that were supposedly nonexistent would indeed impress one with the thought that the person making such a presentation was, to put it mildly, unbalanced. This was the situation in Minneapolis in the year, 1940, at the time of my first appearance. However, owing to the fact that I had been officially introduced by my government and a group of Aus-

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tralian medical men of repute had sought the assistance of their colleagues of the American Medical Association for the further elaboration of my work, I was—through the good offices of Dr. Wallace Cole, Professor of Orthopedic Surgery of the University of Minnesota—allowed to proceed.

My first endeavor was to prove by evidence produced that: (1) The orthodox theory, with regard to the symptoms of the disease, was incorrect; (2) deformities were not caused through strong or normal muscles pulling weak ones; (3) pseudo-paralysis could be induced by the neglect of the treatment of the true symptoms.

It will be remembered that the first report published with regard to this new concept and treatment appeared in the Journal of the American Medical Association, June 7, 1941, and was presented by Drs. Wallace Cole and Miland Knapp who acknowledged that I had produced evidence to prove muscle spasm was present in 100 per cent of the cases under review. Muscle spasm is made up of two phenomena, both of which result from hyperactivity and hyperirritability of the synaptic connections to the motor nerve cells in the spinal cord: (1) Hypertonus of muscles; (2) hyperirritable stretch reflex. These changes, if untreated, persist for long periods of time and in the later stages produce contractures and deformities. They respond to treatment better the earlier in the course of the disease that active therapy is begun. Even after a delay of only a few weeks, muscle spasm becomes far more difficult to relieve. Stretching and pressure on muscles in spasm increase the pain and exaggerate the spasm, making treatment less effective. The muscle in spasm is a weak muscle and intensive treatment is required to restore it to normal function.

Much evidence has been recorded to demonstrate the presence of the condition of mental alienation. The alienated muscle is a non-functioning muscle which is free from pain and is not shortened. It differs from a muscle paralyzed by anterior horn cell destruction in that, with proper treatment, it can be restored to normal function. Alienation is caused by failure of the nervous excitation to reach the intact anterior horn cells as a result of a physiologic block to the passage of impulses in the spinal cord. It is evident that such a muscle will fail to function but will have the potentiality for full recovery, since the anterior horn cells have not been destroyed by the virus.

The spasm is found in the muscle directly affected by the disease and was hitherto referred to as the strong muscle pulling the weak flaccid muscle. The muscle referred to as the flaccid muscle is really the muscle alienated, and has ceased functioning through the physiologic block already mentioned; and the brake put upon its action by the shortened opponent which is in painful spasm. The first procedure in the treatment of these symptoms is to relieve pain to overcome the spasm and allow the hypertonic muscle to relax and lengthen. This will remove the brake upon the opponent but will not remove the physiologic block to the passage of nerve impulses in the spinal cord. This condition requires specialized treatment by a trained technician, and muscles that have heretofore been regarded as completely paralyzed will regain function and become normal. I have demonstrated this phenomenon upon many occasions. I will refer you to the statement made by Dr. Alfred Deacon, Orthopedic Surgeon, Children's Hospital, Winnipeg, which appeared in the Canadian Public Health Journal, August, 1941, reading: "We were astounded to see Miss Kenny restore what we had recorded as completely flaccid or paralyzed muscles to full function by establishing mental awareness."

Also during a recent visit to Minneapolis of Dr. Henderson, Mayo Clinic; Drs. Key, McCarroll and Crego of St. Louis; Dr. Compere of Chicago; Dr. Funstan of Virginia; and Dr. Schumm of Milwaukee, a patient was examined by Dr. Key in the presence of all the above mentioned medical men—also Drs. Pohl and Knapp of Minneapolis—and pronounced to be suffering from complete paralysis of the quadriceps. It was

agreed by all that this was so. This patient had had eleven days of intensive treatment for spasm in the hamstrings and had not yet received the specialized treatment for alienation of the quadriceps. However, I disagreed with the diagnosis and gave her the treatment for alienation and in a few minutes the patient was able to extend her leg and support it in mid-air.

A further example was demonstrated in New Jersey Medical Center, Newark. A patient was presented to me during my recent visit, supposedly suffering from paralyzed lateral abdominals on the left side. This condition had persisted for several months and an operation for the transplantation of the tensor fasciae latae fibers was contemplated in the near future. However, I am happy to say that once again it required only a few minutes by our system of muscle analysis to prove that all the abdominal muscles were normal and could contact strongly. The brake in this instance was in the posterior neck and back. This evidence was presented in the presence of the supervising orthopedic surgeon and the medical supervisor and assistant as well as many others.

I could cite many such incidents but consider evidence recorded in Canada and presented in New York and Minneapolis sufficient. This evidence proves the presence of spasm and alienation.

The next symptom to be discussed is incoordination. I regret to say when this word is used the reply is usually given, "You mean substitution. We have always recognized that" and very little time is given me to explain that I do not mean substitution.

Substitution is a conscious effort put forth by the patient to bring a strong muscle to the aid of a weak or paralyzed muscle and perform a movement. Incoordination is an entirely different condition. It is a misdirected impulse. In attempting active contraction of a muscle, other muscles including synergists, or antagonists, or entirely unrelated muscles, even on the opposite side of the body, or at some distance from the prime mover, may be seen to contract. Muscles that contract in incoordination frequently show fascicular twitchings. Incoordination is also frequently found within a single muscle, in which instance substitution would be impossible. Incoordination may be observed in reflex as well as in voluntary motion and is fundamentally a disorganization of muscle function on an involuntary level. It may be related to the hyperirritability of synaptic connections in the spinal cord which appears to be the cause of muscle spasm. One may think of the virus as producing a breakdown of synaptic resistance and a disorganization of synaptic connections in the spinal cord, so that the impulses run riot as it were, and other muscles not normally in action will contract.

Substitution is also a factor in the abnormal functioning of muscles in poliomyelitis. For example, a patient may have a potentially normal psoas muscle but fail to use it. When requested to flex the thigh, he will attempt to do so from the origin of the sartorius and instead of an even thigh flexion, the action would be that of pulling down the pelvis with the sartorius contracting from its tendinous origin. This will eventually tend toward a pelvic deformity and an apparent leg lengthening. The action of hip flexion will be performed but not with the psoas muscle. A technician trained in the method will quickly detect this and correct the condition.

The condition of paralysis by complete destruction of anterior horn cells is not a common occurrence in this disease. It may occur in about 20 per cent of cases in contrast to muscle spasm, which is present in all cases. One may, therefore, think of anterior horn cell destruction as a common complication rather than as the primary change in poliomyelitis. For true paralyses due to motor denervation there is no effective treatment, since anterior horn cells are incapable of regeneration.

I have frequently heard the remark that patients recover without treatment. I also have frequently heard the remark that patients have been discharged as perfectly normal and have reported perhaps weeks

or months or years later (especially during the period of rapid growth) to the orthopedic surgeon with more or less objectionable deformities. This can be readily understood when the symptoms of the disease have not been treated. The shortened muscles have never been attended; the spasm has not been relaxed; bone growth is retarded; ossification of one limb has been prematurely brought about and much damage has been done.

In the patients treated by our system a very minute examination is given before final discharge. This is to insure that the future of the patient shall not be handicapped if he wishes to follow the occupation of a sailor, soldier, carpenter, plumber, and so on. I have been rather severely criticized for, as it has been expressed, "putting the children through acrobatic feats", by those who are not familiar with our routine.

However, during my visits to other centers I have frequently been presented with patients who have not had the treatment for the symptoms mentioned above and are severely handicapped, although not suffering from any definite paralysis. For instance, I was recently asked by a doctor to give an opinion of a case of long standing poliomyelitis. The patient was a boy twelve years old. He could not run or climb stairs satisfactorily. He walked with a peculiar gait. His pelvis was pulled downward at the back, and he had a compensatory curve in the lumbar region which caused shortening of the spinal muscles. His chest and abdomen protruded. His shoulders were pulled backward. This condition was all caused through untreated spasm in the biceps femoris. The condition had persisted for several years. However, a belated treatment for the cause of all the trouble rectified the condition in six months. Three weeks of correct treatment in the acute stage would have saved all the years of anxiety and financial loss. I have in my possession much evidence of the presence of these conditions which I shall be pleased to present to you—also evidence of the disaster attendant on the non-treatment of those symptoms and conditions.

I have recently returned from a tour of inspection of certain centers where technicians and nurses are working who have received a certain knowledge of the symptoms and the treatment evolved for these symptoms. I have found that when the system is carried out in its entirety much better results are obtained than where there has been failure to utilize certain principles. Out of the eight institutions visited I found only two adhering strictly to the Kenny technic. For instance, I have impressed upon students the advisability of the blanket bed. Two of the eight had adhered to this principle, and I found that stiffness and pain had been overcome much more quickly in these two institutions than in any of the others. Contact with the cold linen sheets will induce spasm and make treatment much more difficult. The advisability of treating the conditions from the onset may be confirmed by the evidence submitted by Dr. Lowman of Los Angeles. Dr. Lowman stated that patients he received from the Infectious Disease Hospital were in such good condition that he was doubtful about the severity of the onset and made it his business to visit the institution and see for himself. He examined the patients and found the epidemic was a severe one. The patients were very sick. The good condition upon discharge to the Orthopedic Hospital was not due to a mild infection but to the treatment of the true symptoms in the acute stage. I also found during my round of visits that muscle testing according to accepted orthodox theories had been practiced in several of the institutions with the result that spasm was aggravated and muscle shortening prolonged and hope of final normal recovery minimized. However, despite the failure to adhere strictly to the method a much higher percentage of recoveries has been obtained than upon any previous occasion, and the medical supervisors were all very well satisfied.

The highest recorded recoveries in the past, according to statistics presented from the St. Louis group was 17 per cent. At all

the institutions practicing the Kenny Method the recoveries were approximately 80 per cent. Where the work was strictly carried out the percentage was still higher.

It will be readily understood by the evidence presented in this paper that the concept of the disease is a new one and, to gain the best results, must be recognized as such. The symptoms caused by the introduction of the virus into the nervous system are far more complex than those previously accepted and treated. My contribution to medicine has not been a reformed treatment but an entirely new concept. I am hoping that with further scientific research a progressive improvement may be brought about. I am happy to say that the research instituted since my arrival in the United States of America has increased the evidence to prove my concept correct.

THE CHRONICITY OF LEPROSY

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Carville, La.

Howard Fox says that when he was in Bergen, Norway, in 1903 he met Dr. Armauer Hansen, who seemed proud to show him a patient who had suffered from leprosy for 40 years. He recalled this incident later on his visit to the leprosarium in Spanish Town, Jamaica, in 1931, when he saw three patients who had had leprosy for 51, 45 and 35 years, respectively. Through correspondence he recently learned that one of them was still alive, 61 years after the onset of leprosy.

These notes of Fox[1] stimulated me to review the clinical records of the patients at the National Leprosarium. I found that among 380 present inmates there are five with neural type of leprosy who have had the disease for 53, 51, 48, 46, and 41 years, respectively. Eighteen others, 14 neural and four mixed cases, have survived 30 to 40 years of leprosy, and 32 (19 neural and 13 mixed cases) have suffered from leprosy for 20 to 30 years. Thus a total of 55 patients, over 14 per cent of the entire population of the National Leprosarium, show a chronicity of leprosy of over 20 years' duration. Since more than 70 per cent of the residents of the National Leprosarium have a predominantly lepromatous type of disease, the higher incidence of neural cases among the long-lived patients becomes more significant.

The table below shows the distribution as to type and duration of leprosy in these 55 patients.

TABLE 1.

DISTRIBUTION AS TO TYPE AND DURATION OF LEPROSY IN 55 PATIENTS

	Duration		
Type	20 to 30 years	30 to 40 years	40 to 53 years
Neural	19	14	5
Mixed	13	4	0

It is well known that the prognosis of lepromatous (nodular) leprosy is much worse than that of the neural type. The duration of life in lepromatous leprosy, after the diagnosis has been established, is usually limited to 10 to 12 years. Occasionally the superimposition of neural lesions in a lepromatous case has a favorable influence upon the prognosis and causes the nodular lesions to subside. This probably accounts for the comparatively long life of the cases of mixed leprosy reported in the above table.

In neural leprosy the span of life is not necessarily shortened. Indeed it may even be prolonged, as noted in the first of the six cases of neural leprosy reported here. This case seems to substantiate the claim that one way to live to an old age is to develop a chronic illness and nurse it.

CASE No. 1

A white man, born in Mexico, has suffered from leprosy for 53 years. He entered the United States in 1888. Two years later, at the age of 14, the diagnosis of leprosy was made and he was admitted to the isolation hospital in San Francisco. In March 1922 he was transferred to the National Leprosarium.

The first manifestations of leprosy were maculoanesthetic lesions on the forehead and body. Numbness and swelling of the hands and feet were next noted, followed by facial paralysis. Leprosy has resulted in total blindness since 1899, a period of 44 years.

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The patient has outlived his four brothers and four sisters, none of whom had leprosy. There is little doubt that leprosy has been a means of prolonging his life, since continuous institutional care has protected him from the hazards and diseases of outside life.

At present the disease is definitely arrested, although it has rendered the patient totally disabled for gainful occupation. He is satisfied and contented with institutional life, taking great interest in his surroundings and the music and news he hears on the radio. The accompanying photograph shows his present condition of blindness, bilateral facial paralysis, drop wrists, and clawed hands.

CASE No. 2

A white man, born in 1880, recalls that as a boy he sustained several painless injuries. At the age of five he was struck in the head with a brick and at the age of 12 cut his left foot on a broken bottle without feeling any pain. He states that his family physician explained these painless injuries to his parents by telling them that he was born with abnormally twisted nerves. He remembers that from early youth his hands and feet felt numb. As he grew older his fingers began to contract.

It was not until 1919 that Dr. Dyer saw him and made a diagnosis of leprosy and had him admitted to the Louisiana Leper Home. At that time he was weak and run down and had ulcers of the feet. Six months later, when he had regained his strength and the ulcers had healed, he absconded.

For 19 years he was able to earn a living and traveled into several States. Finally, in California, he sought treatment at the Los Angeles County Hospital for painless burns of the feet. The diagnosis of leprosy was again confirmed and he was returned to the National Leprosarium.

At present there is anesthesia of the scalp, face, all four extremities, and some parts of the body. Neurotropic bone absorption has resulted in shortening of the feet, and there is a large tropic ulcer of the left foot. The hands are atropic and clawed, with shortened fingers. Extensive facial paralysis has occurred. Even if it is considered that the manifestations of neural leprosy were not established until the age of 12 years, he has had the disease for 51 years. If the age of five is regarded as the time of onset, leprosy has persisted for 58 years. The disease is still active, and bacteriologic smears positive for *M. leprae*.

CASE No. 3

A white seaman was first admitted to the Louisiana Leper Home in 1895, at the age of 38 years, but remained there only four months. His next admission was in March 1906, at which time a history was obtained dating the onset of the disease to an inflammation and numbness of the big toe 12 years previously. This was followed by muscular atrophy of the feet and hands.

The disease, remaining neural in type, has now been present for 48 years. It has resulted in extensive anesthesia of the limbs, clawing of the hands, bone absorption of the feet with drop feet, and a facial paralysis. The last positive bacteriologic smears for *M. leprae* were reported in 1926.

CASE No. 4

A white woman, 64 years of age, was first admitted to the National Leprosarium in 1927. She stated that she noted circinate macules on the face, right knee, and back at the age of 18 years.

The progress of the disease has been slow, and it was not until she was 30 years old that she became aware of a loss of sensation in the hands and feet. Since then she has had repeated attacks of ulnar neuritis. Gradually her fingers began to contract and a troublesome callous plantar ulcer developed in her left foot. After 10 years of hospital treatment the ulcer healed and she was discharged as an arrested case.

The following year she was readmitted voluntarily for a reactivation of the disease and a recurrence of the perforating ulcer of the left foot. Since skin smears are still positive for *M. leprae*, neural leprosy has been periodically active for 46 years.

CASE No. 5

A white woman, 49 years of age, was first admitted to the Louisiana Leper Home in 1904 at

the age of 14 years. The onset of leprosy occurred two years earlier in the form of macules on the chest, abdomen, arms, thighs and legs. Later anesthesia of the hands and feet was noted, then a gradual flexion contraction of the fingers.

At present there has developed complete absorption of the fingers of both hands, partial absorption of the toes with clubbing of the feet, a tropic ulcer of the right foot and complete anesthesia of all limbs and the greater part of the body. The last positive bacteriologic examination was recorded in 1926. This patient has suffered from the neural type of leprosy for at least 41 years.

As further evidence of the chronicity of leprosy, it is interesting to report an additional case of neural leprosy of 28 years' duration prior to admission to the National Leprosarium.

CASE No. 6

A white woman, 48 years of age, states that she first noticed the appearance of circinate macules on the face and chest when she was 20 years old. At the time she consulted a physician, who made a diagnosis of leprosy and advised her to go to the Louisiana Leper Home for treatment. Instead of following his advice, the patient preferred to remain at home and treat herself. This she continued to do while the disease became gradually more advanced. Finally, when an acute cellulitis of the feet set in, with which she was unable to cope, she applied for admission to the National Leprosarium.

The entrance examination showed an advanced mutilating form of neural leprosy with anesthesia, much bone absorption of the hands and feet, infected tropic ulcers of the feet and partial facial paralysis.

SUMMARY

1. A report of 55 patients with leprosy who have survived the disease over 20 years, comprising 14 per cent of the present population of the National Leprosarium, well demonstrates the chronicity of leprosy.

2. This chronicity is more characteristic of the neural type of the disease, which accounts for 38 of the 55 cases, although neural leprosy affects less than 30 per cent of the total number of patients at the Carville leprosarium.

3. The five cases with the longest chronicity, varying from 41 to 53 years' duration, are all of the neural type.

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AMERICAN CONTRIBUTIONS TO NEUROSURGERY*

CHARLES WILSON, M. D.
NEW ORLEANS

"Surgery of the brain is the outgrowth of three discoveries of the nineteenth century: anesthesia (1846), asepsis (1865), and cerebral localization. Without asepsis (or antisepsis) surgery of the brain would never be possible. With asepsis and without cerebral localization, it could be of but little value. With both asepsis and cerebral localization and without anesthesia, it would be possible but greatly limited." (Dandy).

Cerebral localization had its inception in 1861 when Broca made his brilliant conclusions from careful observations of a patient with aphasia in whom a tumor in the area now known by his name was found at autopsy. "In 1870, Fritsch and Hitzig applied an electric current to isolated points on the exposed brain of a dog and observed focal responses in the contra-lateral extremities. This observation was destined to revolutionize the methods of investigation and knowledge of cerebral functions." The work appeared at a time when a heated controversy existed between the leading physiologists of the day over cerebral localization. Goltz had demonstrated that his decerebrate dogs could wink, swallow, and walk, in the entire absence of the cerebral cortex, and Claude Bernard had observed both ipsilateral and contralateral signs referable to tumors in only one cerebral hemisphere. Bernard felt that cortical control was a function of the whole brain and not of any one of its parts. It is rather surprising that so able a physiologist as he was did not test the theory of cerebral localization by the simple means of electrical cortical stimulation. There had accumulated some evidence of the contralaterality of cortical control before the work of Broca and of Fritsch and Hitzig. Mistechelli (1709) and Petit (1710) had independently

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described the decussation of the pyramidal tracts in the medulla, and Pierre Marchettis (1666) is said to have cured a case of contralateral hemiplegia by removing a depressed fragment of the skull. Cruveilhier, in 1829, suspected a right frontal lobe tumor in a patient showing frontal headache, feebleness of the mind, slow speech, and weakness of the left leg. The patient was demonstrated to the students. At autopsy; a right frontal dural endothelioma was found, thus proving the diagnosis. In 1873, Ferrier, who was then working obscurely in the West Riding Lunatic Asylum, published an epoch making paper, describing in detail constant focal response in the contralateral extremities obtained by stimulating fixed and well mapped points in the motor areas of dogs, cats, rabbits, and other animals . . . "So carefully were his experiments performed that their correctness has since been repeatedly confirmed, and Ferrier's then revolutionary thesis remains unchallenged." At the Physiological Section of the International Congress of Medicine in London, 1881, Ferrier demonstrated a monkey made hemiplegic by removal of the cerebral cortex on the contralateral side of the brain. As the monkey limped on the stage Charcot gasped, "It is a patient."

Bartholow of Cincinnati was the first to demonstrate the response to stimulation of the human cortex (1874). His patient had a carcinoma of the scalp which had destroyed the parietal bone. Bartholow punctured the dura with his electrodes and stimulated the pre-Rolandic area, producing contralateral local and spreading muscular contractions and even convulsions. He thus confirmed the earlier observations of Hughlings Jackson who described the focal seizures in the epilepsy that bears his name. During the next 30 years, some 74 cases of cortical stimulation in the exposed human brain were reported. In 1902-03, Charles Sherrigton mapped out the areas of motor localization in the great anthropoid apes. It is interesting that subsequent maps of the human brain showed a certain area of cortical control which is not really present as described, and reflected the influence of Sherrigton and his ape brains. Several of these 74 cortical stimulations elicited leg movements from stimulation of the upper part of the motor area on the convex surface of the cerebral hemisphere, but it is evident now that in such cases too strong a current was used or a tumor was present which distorted the leg control area, for this area, contrary to even recent neuroanatomic teaching, lies on the medial surface of the cerebral hemisphere, down deep in the great longitudinal fissure. Scarff, utilizing rather amazing exposures of the cerebral cortex and invading the dangerous median longitudinal area where hemorrhage from the superior saggital sinus and its tributaries is the fearful outcome of a slight misstep, has outlined this previously mis-described area (1940).

Following the discovery of the motor area of the cortex, the sensory, auditory, visual, word-imagery, and olfactory areas were described in rather rapid succession. Even today, however, for all our knowledge of areas of cortical control, only about 80-85 per cent of intracranial tumors can be correctly localized from the neurologic signs and clinical symptoms alone. The remainder require the application of special procedures, such as Dandy's ventriculography, olfactory tests, ophthalmologic studies, and psychometric tests.

Surgery grew out of its infancy into adulthood when a bacteriologist showed that suppuration was caused by microorganisms and that microorganisms could be killed and infection obviated. On August 12, 1865, Lord Joseph Lister used a phenol spray to disinfect the air of his operating room, to sterilize hands and instruments, and to saturate the wound. The wound of the patient healed by first intention, without "laudable pus", without fever, and more quickly than before. Thus was antiseptic surgery born, and from it gradually evolved the modern principles of asepsis. It now became possible to enter any of the body cavities, without fear that death was almost certain.

The first operation for the removal of a cerebral tumor which was diagnosed by neurologic methods was in 1884, when the surgeon Rickman Godlee, on the advice of the neurologist Hughs Bennett, opened the skull of a young man and extirpated a tumor, a subcortical glioma. This unheard of feat attracted a great deal of attention. The Lancet, (December 1884:1090) bore a report of the operation even before Godlee and Bennett were ready to publish. This note, entitled "Excision of a Tumor from the Brain", makes interesting reading:

Excision of a Tumour from the Brain (Under care of Dr. H. Bennett and Mr. R. J. Godlee). The Lancet, December 2: 1090. (Hospital for Epilepsy and Paralysis, Regent's Park.)

During the last few weeks several notices have appeared in various medical papers concerning a man at present in the above hospital, from whose brain a tumour has been successfully removed. This operation, performed we believe, for the first time in the history of medicine, has attracted much notice amongst the profession, and numerous inquiries have been made as to the truth of the reports. Pending the termination of the case, and the more complete and scientific account of it which Dr. Bennett and Mr. Godlee will doubtless subsequently publish, we are in a position to furnish our readers with the following brief narrative of facts.

Young man, aged 25. C. C. Paralysis of left arm.

Four years ago, blow on head with timber (left side; slight effect).

Three years ago, slight twitching on left side of face and tongue.

Fit, beginning in left face, extending down, ending in convulsion and coma. These occurred about once a month for the next two and a half years.

Six months ago, twitching of left arm and hand. Weakness.

Three months ago, twitching of left leg. Weakness. Violent headaches.

P. E. Double optic neuritis.

These briefly stated are the chief symptoms which this patient presented. Combined with a general consideration of the facts of the case they led Dr. Bennett to arrive at the following conclusions. First, that there was a tumour in the brain; secondly that this growth involved the cortical substance; thirdly, that it was probably of limited size, as it had destroyed the centres presiding over the hand, and only caused irritation without paralysis of the centres of the leg, face, and eyelids which surround it; and fourthly, that it was situated in the neighbourhood of the upper third of the fissure of Rolando.

Accordingly, on November twenty-fifth, Mr. Godlee trephined the skull, and removed a triangular piece of bone over the region corresponding with the upper part of the fissue of Rolando. The surgical details need not be entered upon. It is at present sufficient to say that even after the bone was removed, the dura mater slit up, and the cortex of the brain exposed, no tumor was visible. The ascending frontal convolution, however, seemed to be somewhat distended. An incision about an inch long was made into the grey matter in the direction of the blood vessels, and a quarter of an inch below the surface a morbid growth was found. This was carefully removed and proved to be a hard glioma about the size of a walnut . . . The hemorrhage was arrested by the galvano-cautery and the wound brought together by suture.

(In Lancet, 1885, 1:13 and 891, it is reported that the man died a month later of infection at the site of the wound, following in the wake of a mild fungus cerebri.)

At the presentation of the paper, Ferrier reported an intracranial operation by Lister. The latter had trephined over the right frontal region in a patient with increased intracranial pressure and suspected of having a right frontal lobe tumor. On opening the skull the brain protruded markedly at an alarming rate. Lister introduced a finger into the mass and entered the dilated right ventricle, allowing a considerable amount of cerebrospinal fluid to escape. This was followed by a reduction in the cerebral hernia. Although there was immediate postoperative relief, and perfect wound healing, the patient died in eight days, and it was discovered at autopsy that Lister's finger had missed feeling the tumor by half an inch.

Also present at the above meeting were MacEwen and Victor Horsley, both destined to be pioneers in the field of neuro-surgery. MacEwen, in 1876, had diagnosed a frontal lobe abscess in a patient and proposed operation. The family of the patient refused. At postmortem, MacEwen performed his proposed operation and substantiated his diagnosis and showed the validity of his proposed procedure. Horsley had already done a considerable amount of work on the monkey at the time of the report.

Following Godlee's and Bennett's report, surgeons became bolder in attacking intracranial tumors. The next year (1885), Francesco Durante reported another operative attempt; in 1886, Horsley reported ten intracranial operations; and two years later, MacEwen startled his audience by reporting 21 operations of the brain with 18 recoveries. W. W. Keen, of Philadelphia, the pioneer American neurosurgeon, reported the successful removal of a meningioma in 1888. This patient was well 30 years later. Three years later (1891), Keen reported five additional cerebral operations. R. F. Weir (1887) reported the unsuccessful attempt at removal of a brain tumor; the Rolandic area of the brain was explored at operation, although the tumor proved at autopsy to be located in the cerebellum.

Ernest von Bergmann, in 1898, reported on the results of 273 collected cases, with only a 38 per cent survival. His pessimistic report marked the end of a wave of enthusiasm over cerebral surgery. In the hands of such men as Krause, Horsley, MacEwen, and Keen, many advances were made, but as the end results of operations for cerebral tumors were viewed critically, it was apparent that brain surgery had little to offer most patients. Even Horsley, a born optimist, had failed to convince his neuologic colleagues, who turned their tumor cases over to him reluctantly and only as a last resort.

The whole subject lay under a shadow. Fewer operations were being performed and even these were frequently unsatisfactory. No one thought of limiting his endeavors to cerebral surgery, and even Horsley was getting busy with other duties of a general practice. In the medical and surgical records of Johns Hopkins Hospital up until the beginning of 1901, the diagnosis of brain tumor was made only 32 times in about 36,000 patients admitted during the previous decade. Thirteen of these were transferred to the surgical wards and of these only two were operated on, both unsuccessfully; in eight, the tumor was disclosed at autopsy without previous operation; and in the other three cases the presumed diagnosis was never verified.

Then came the genius of Cushing—and the dawn of neurosurgery as we know it today. Harvey Cushing was serving as intern at Massachusetts General Hospital in the middle 1890's when the heavy clouds of pessimism were settling over surgery of the central nervous system. It was in his internship that he showed the first real signs (in Harvard he had been a mediocre student) of the qualities of the leadership he was to assume. His clinical notes, case histories, and records bore a stamp of originality and were graphically illustrated by numerous free hand drawings of the clinical findings and operations. They were characterized by artistry and exacting care in preparation. The young doctor was one of the first to use the crude x-ray machines then in existence—a machine that required the operator to crank it vigorously in order to produce the required current. His careful recording of the changes in blood pressure, pulse, and respiration during general anesthesia was a precursor to the modern anesthetist's chart.

In 1896 Cushing took a residency at Johns Hopkins Hospital under William Stewart Halsted where he remained until 1900. Coming under Halsted's influence for the first time, Cushing was introduced to a new type of surgery: absolute hemostasis, painstaking care in the handling of tissue, slow deliberate surgery which held time to be of secondary importance to care. Initial misgivings gave way to enthusiastic support, and Cushing became one of the most ardent advocates of careful, painstaking surgery—certainly an essential technic for intracranial operations.

In 1900, Cushing went to Europe for further study. He first visited Victor Horsley in England, but was disappointed in finding that the great Horsley had lost much of his interest in cerebral surgery and was turning away to the absorptions of general practice. Leaving England, Cushing went to work in Kronecker's Laboratory in Berne, Switzerland. Finding him interested in cerebral physiology,

Kocher put him to work on intracranial pressure experiments: valuable training with far-reaching effects on the young enthusiast. Regarding his sojourn in Europe, he remarked that he worked "undistracted by the responsibilities of patients, with no thought awake or asleep, beyond the single problem at hand." Early evidence this, of that power of concentration which was among his greatest faculties. Following his stay in Berne, he visited Mosso's laboratory in Italy (Turin); and he worked for four months in Sherrigton's laboratory, at Liverpool, on problems related to the motor cortex of anthropoid apes.

Returning to Johns Hopkins he once more joined Halsted's staff and startled his chief by announcing his intention of devoting himself exclusively to surgery of the central nervous system. In addition to the "fact" that neurosurgery offered little to the unfortunate patient, it was thought that there were not enough patients in this category to justify anyone's exclusive devotion to this field.

"As an interne he had seen the inadequacy and hopelessness of operations on the brain as carried out at that time—a small trephine opening at a point on the patient's skull indicated by the neurologist —and of course no lesion found."

Cushing early grasped the fact that if anything was to come of neurosurgery, it must come from men who had a grasp of both neurology and the technics of surgery. As he himself said: "Whatever his specialty may happen to be, it is only when a surgeon is shouldered with the responsibility of acting largely on his own diagnosis that he will be impelled seriously to study his own cases before they come to the operating table and will be inclined to follow the results of his procedures to the end to see wherein his mistakes can be rectified on subsequent occasions."

Starting with only a few patients marked as "possible neurosurgical candidates" and with but a few beds in the Neurology Ward, Cushing set about devoting himself to problems of birth paralysis, epilepsy, hydrocephalus and the like. Of brain tumors there were but few; from 1901 to 1913 he had but 194 verified tumors.

Cushing records his first case of intracranial tumor as follows:

> A well nourished but undersized and sexually undeveloped girl 16 years of age was admitted to Dr. Osler's service at the Johns Hopkins Hospital on December 12, 1901, with the complaint of headaches and failing vision. She had a peculiar waxy appearance of the skin which suggested nephritis, and though the urine of low specific gravity was considerably increased in amount, no renal elements were ever found. The optic nerves were said to show atrophy with superimposed oedema; and constriction of the visual fields, though not plotted, was apparent on rough tests.
>
> On February 21, March 7 and March 17, 1902, under the encouragement of my then neurological colleague, the late H. M. Thomas, three exploratory operations were performed. They served merely to disclose an internal hydrocephalus. The patient became increasingly stuporous, developed quadripedal rigidities, and finally died on May 1, of inanition with a terminal pneumonia. There was found at autopsy a tumor of the interpeduncular region which was diagnosed by Dr. Welch as a teratoma arising from an anlage of the pituitary body.
>
> The postmortem disclosure of this wholly unsuspected and apparently inoperable tumor was highly disconcerting and made on me a deep impression. Interest was further aroused by Frohlich's description in the same year of a pituitary tumor associated with what was called adiposogenital dsytrophy rather than the acromegalic changes supposedly produced by a tumor in this situation. This coincidence was what incited my long-time interest in pituitary disorders.

By 1908, Cushing had become a leader in his field. Using Esmarch's bandage to control scalp bleeding, Obalinski Gigli's flexible saw (originally designed for pubiotomy) to cut between openings made by Doyen's burrs, Horsley's bone wax (1908) to control bleeding from the diploë, and a modification (Bovie) of the "Potzi" fulguration unit to control hemorrhage from small vessels in the brain, he constantly sought to improve his technic, diagnoses, and operative results.

While other men reported operations which were frustrated by hemorrhage, Cushing assiduously set about conquering this dangerous annoyance. He was one of the first to adopt Horsley's bone wax and to see its simple splendor. Krause, in a

three volume monograph published in (1909), mentions Horsley's wax, stating he had never used it, and describing complicated, time-consuming and futile methods of controlling bleeding from the diploë and venous sinuses of the skull. Cushing also was the first to abandon the complicated methods (bandages, tourniquets, flap clamps and so on) of controlling scalp bleeding, and perfected the method now in use, of digital compression and clamping the galea. In 1911, he reported the use of the silver clips which now bear his name. He reported the improvements in hemostasis and comments: "The successful consummation of any critical operation often depends on seeming trifles. It is, however, the scrupulous observance of surgical minutiae that makes possible the safe conduct of major intracranial performance—performances which a few years ago were attended in most cases by a veritable dance macabre."

With perfection in his technics for controlling hemorrhage, Cushing found he was able to go deeper, search further, extirpate more widely, and conduct the performances more safely than had ever been attempted before.

Not all tumors can be removed surgically. But small growing tumors sometimes result in early blindness. Here, Cushing's palliative subtemporal decompression (1905) prolonged the lives and spared for months or even years the eyesight of hundreds of victims of inoperable tumor of the brain. Earlier attempts had resulted in the horrible "fungus cerebri" which was the spectre confronting the surgeon and patient in misguided attempts to relieve the ever increasing pressure within the cranial cavity.

In 1912, Cushing published his classic "Pituitary Body and Its Disorders." This was but a marker in his life-long interest in the pituitary gland, an interest born of his first neurosurgical case. He perfected methods of diagnosis to a fine point and in his verified tumor series, pituitary tumors stood second in frequency (17.8 per cent) of intracranial neoplasms. He described the syndrome associated with pituitary basophilism—"Cushing's syndrome."

Cushing was more than an investigator and clinician—he was a superb teacher. When he became an assistant in surgery under Halsted he was also given a teaching assignment in Johns Hopkins. One of his courses, that of experimental surgery, was the most outstanding course in the Junior and Senior classes, though it was purely elective. But in addition to teaching undergraduates, he organized and directed the new department of neurosurgery. And a hard task master he was. "Eyes on the ball!" jerked many a wandering mind back on the "qui vive." He personally directed preoperative study, the history, physical examination, and x-ray studies of patients before operation. "The operation itself was both an artistic and a technical masterpiece. No pains were too great to make the procedure perfect . . . Time was no element: three to five hours at the operating table were usual for major procedures, whereas in unusually difficult operations, seven to eight hours might be consumed!" Post-operative care was no less intensive and thorough. "It was this unending care and ceaseless work it entailed which seemed hard to his pupils, since they shared the work, and much was expected of them . . . "

"And what did all these pains accomplish? It reduced the mortality for operations on the central nervous system to the lowest figure in history and gave to the patients who came under Dr. Cushing's care a better chance of being cured or relieved for a longer period of time than they would have had in any other hands. It not only established modern neurosurgery by carrying this surgical specialty far beyond the pioneer efforts of Sir Victor Horsley, but it inaugurated a school of neurosurgery which carried the teachings of the master to the ends of the world." (Horrax).

A mere list of the names of Cushing's pupils is sufficient to inspire respect, for nearly every one has created a name for himself, and many occupy important positions in neurosurgery today. Dandy, Fra-

zier, Horrax, Penfield, Sachs, and Rand are names which merely begin the long list.

Walter Dandy, like Cushing and most other neurosurgeons, began by working on problems such as birth paralyses, epilepsy, and hydrocephalus. From the latter investigation came one of the most important developments of the century in methods of localization. Dandy and Blackfan (1913), working under Cushing, proved for all time the important site of formation of cerebrospinal fluid and its circulation through the ventricles, foramina, and aqueduct of the brain. It is safe to say that without this vital information, neurosurgery would still be 20 years behind its present development. Continuing his investigations in the "third circulation", Dandy developed and perfected the method of pneumoencephalography, almost a *sine qua non* in the exact localization of cerebral tumors. Although the discovery, a by-product of a series of studies on experimentally induced hydrocephalus, was largely accidental, much credit goes to Dandy for immediately grasping the clinical possibilities, and for his courage in perfecting the dangerous technic to the point where today it is a relatively harmless procedure. Many other advances have sprung from Dandy's hand: cauterization of the choroid plexus in hydrocephalus, cannulation of the cerebral aqueduct, important contributions to pathology and diagnosis of cerebral neoplasms, are but a few from many.

Percival Bailey worked with Cushing on the difficult problem of classifying cerebral neoplasms. Their work on classification, though since challenged, remains the best available today ("A Classification of Gliomata," 1925). Bailey was with Cushing from 1919 to 1928. In 1922, Bailey was made head of a pathology department devoted exclusively to the study of intracranial tumors. Bailey's "Intracranial Tumors" (1933) was published after he left Cushing; his place was taken in 1928 by Eisenhardt, who later became Director of the Cushing Brain Tumor Registry at Yale (1933). Eisenhardt devised many important methods of study and differentiation of pathologic tissue, and it was through her that Cushing was able to collect and publish his classic "Intracranial Tumors" (1932) which was a collection and analysis of 1000 verified tumors of the brain, with case histories and "follow-ups."

The New York school of neurosurgery deserves mention. Some of the earliest operations in this country were performed by Arpad Gerster at Mount Sinai. In 1892, Frank Hartley independently described the operation for the intracranial exposure of the Gasserian ganglion, which was also described by Fedor Krause. In 1903, Robert Abbe, surgeon to St. Luke's Hospital, gave an account of the operation of "neurectomy" of the intracranial branches of the trigeminal nerve. The operation developed by Hartley and Krause was used for the relief of the painful affliction known as "tic douloureux".

C. A. Elsberg in New York has been the outstanding figure in diseases of the spinal cord. In diagnosis, pathology, and treatment his book is the authoritative source. He is perhaps to surgery of the spinal cord what Cushing was to surgery of the brain. In New York too are A. S. Taylor who developed the technic of the operation for birth paralysis of the brachial plexus and described (independently of Alessandri and Bonome of Italy) the operation of hemilaminectomy, so widely used today in the approach to ruptured nucleus pulposus; (Horsley in 1887 perforated a laminectomy for a cord tumor) Byron Stookey who has made notable contributions to surgery of the trigeminal nerve; Scharff, already mentioned, and others.

To C. H. Frazier goes credit for describing the most popular operation today for trigeminal neuralgia—intracranial section of the posterior root, sparing the motor root and surgically differentiating the three divisions of the nerve. (Olaf Sjovist in 1938 presented nine cases of trigeminal neuralgia ("tic douloureux") in whom "intra-medullary tractotomy" had been done. This work has been extended and improved by F. C. Grant of Philadelphia, who in 1941 reported 19 cases so treated.)

The list grows long and perhaps not too much is to be gained by extending it. Let us note, in passing, that the United States had dominated the development of neurosurgery almost until the present time. Until recently it was a specialty only in the United States. In Great Britain, in spite of the influence of Horsley and the Hospital for the Paralyzed and Epileptic in London, neurosurgery was not a specialty for many years. Percy Sargent, who succeeded Horsley at Queen's Square in London, told Elsberg that he did not believe there were enough cases to justify a separate service. In France, the lamented DeMartel (who incidentally was the first to use local anesthesia) although a skilled operator on the brain and cord, remained a general surgeon to his death (by suicide, the day the Germans took Paris.)

In Germany, although Krause made a brilliant start, neurosurgery as a specialty did not "take hold" until recent years.

Since Cushing's death (coronary occlusion) in 1939, his brain child has continued to grow with vigor and enthusiasm in many parts of the world. His prediction for specialization within the "specialty" has been amply confirmed. Much has been accomplished but as much more remains to be done.

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UNDULANT FEVER

ITS EPIDEMIOLOGY AND DIAGNOSIS

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Undulant fever is a disease that is universal in its distribution and in every port of the world it is known by a different name. A few of these synonyms are: dust fever; brucellosis; Malta fever; Mediterranean fever; goat fever; contagious or infectious abortion of cattle; Texas fever; Rio Grande fever.

By definition, Cecil's textbook says: "Undulant fever is an acute and chronic disease of varied duration with protean manifestations, characterized by fever, weakness, sweating, and aches caused by a general infection with a member of the abortus group micro-organisms" and in Musser it says that it "has an insidious onset, with a prolonged remittent or undulating type of fever, loss of weight, anemia, splenomegaly, a low mortality rate and a prolonged convalescence."

Brucellosis itself is no new disease, although within the last 15 years it has gained a place of great importance, with a great number of new cases being reported each year which is probably due to more specific and accurate diagnostic laboratory procedures. Spanning the pages of medical history we find descriptions of "fevers of unknown origin" as far back as Hippocrates' day, that could easily fit the clinical picture

of many cases of the chronic brucellosis that is seen today.

ETIOLOGY

Cleghorn, in 1751, gave an accurate description of acute brucellosis, including the autopsy findings. Burnett in 1810, Hennen in 1816, Heastie in 1830, and Davy in 1842, were among the first contributors to establish the true antiquity of the disease. Burnett, in 1814, wrote a description of "Bilious Remittent Fever" of the Mediterranean, differentiating it from malaria because the former did not respond to "bark infusions."

It was during the Crimean War that the disease first attracted great attention, and Marston, who suffered from the fever himself, gave great study to the infection, differentiating it as a separate and distinct clinical entity from typhoid in 1863.

Bruce, in 1886, isolated a coccoid organism from the spleen of patients dying with brucellosis and by culturing the organism produced the disease in monkeys from his cultures. Also by injecting the blood of living infected patients into monkeys he also produced the disease in the animals. Bruce called this organism micrococcus melitensis.

In 1897 the contagious abortion in cattle was found to be due to an organism named *Bacillus abortus* by Bang of Denmark. It was not until 1917, however, that Evans showed by cultural methods that the *Bacillus abortus* of Bang and the micrococcus melitensis of Bruce were the same morphologically, biochemically and antigenetically.

Musser and Sailer, in 1899, described the first cases in this country in men returning from the tropics. In 1904, Craig described the disease in soldiers returning from the Philippines. Also he described the first case occurring in this country in a patient, a nurse, who had never been out of the United States or been in contact with "Malta fever" patients. At this time he suggested that the "typhoid like" cases in this country were probably due to brucellosis and from that time on an increasing number of cases have been reported.

Gentry and Ferenbaugh, in 1911, reported a few cases in the goat raising areas of Texas, New Mexico, and Arizona, while in 1922 Lake and Watkins described an epidemic in Phoenix, Arizona, traced to infected goat's milk.

In 1924, Kiefer reported the first case due to the bacillus abortus of cattle, and in 1927 Carpenter isolated an organism indistinguishable from *B. abortus* in five cases diagnosed clinically as brucellosis. Carpenter cultured these organisms and injected the cultured micro-organisms into five pregnant heifers which promptly aborted. Prior to 1927 brucellosis was considered a medical curiosity appearing only in endemic infections in goat raising areas, such as Texas, New Mexico, Arizona; but with Carpenter's experiment one can easily see how the eyes of physicians over the entire world were opened to a possible diagnosis of "unexplained fevers."

EPIDEMIOLOGY

The cause of undulant fever is the Brucella organism. This is a non-motile, gram-negative, pleomorphic organism, sometimes coccoid in character and again appearing as bacillus. It grows slowly on first isolation culture and requires special media. The organism does not ferment sugar and is very resistant to drying.

There are three strains of the organism: bovine, porcine, coprine; *Brucella abortus, suis,* and *melitensis. Brucella abortus* is infectious to cows, producing contagious abortion in cattle. It is also infective for sheep, goats, horses, dogs, rats, cats, guinea pigs, chickens and other fowl. There is hardly ever any acute symptoms seen in cattle unless a metritis or mastitis occurs. The blood may or may not be positive for agglutination.

Brucella melitensis produces an acute infection in goats and sheep, later passing into a chronic type of infection which may be detected by blood agglutination, culture or intradermal skin test reactions. If cows are infected with *Brucella melitensis* they do not abort but the organism may be passed out in the milk.

Brucella suis is infectious for pigs sometimes producing abortion in these animals. The American suis strain may infect cows

and when it does it is passed out in the milk. Other animals, such as horses, dogs, and fowl, are less often infected.

Brucella abortus is the primitive strain of the Brucellae organisms, the other strains having been developed through host adaptation.

There are then three important sources of infection from cows, goats and pigs. As these animals are domesticated in all parts of the world, it is easily conceivable that brucellosis is a universally known and diagnosed clinical entity.

There are four commonly known methods of the passage of the Brucella organisms to human beings. These are: (1) The ingestion of raw milk or dairy products, such as butter and cheese made from unpasteurized infected milk; (2) the handling of infected material; (3) the ingestion of contaminated uncooked foods; (4) contact with humans who have the disease.

Number three and four of the above may be discarded promptly, for even though meat is infected present day standards and government regulation inspection of meat and meat packing plants tend to prevent any kind of contaminated meat from reaching the consumers. Too, as people learn more and more the dangers of eating raw meat, there will be a lowered incidence of brucellosis.

There has never been a proved case of transmission of the disease from human to human, but as long as the Brucella organism is excreted in the urine and feces of an infected patient (this occurs in 10 per cent of cases), this is a possible method of spread of the disease.

At the present time the consumption of raw milk and dairy products is the chief source of infection. In the cities today there is less brucellosis than formerly because the state and city health laws requiring the pasteurization of milk has cut down this source of infection tremendously. But in the country, where the population does not have the facilities for pasteurization and in many areas have not had the education concerning the value of pasteurization of milk, there occurs the greatest number of cases of brucellosis. It is estimated that today ten million people are exposed to brucellosis infection through the ingestion of raw milk alone. As for example Algie, Angle, Baumgartner and Lunsford tested 7,122 school children with intradermal skin test and 9 per cent reacted positively. Out of this 9 per cent, 79.3 per cent drank raw milk. Gould and Huddleson observed 845 positive reactions out of 8,124 persons tested or a total of 10.3 per cent. Most of these people were from institutions that consumed raw milk or dairy products made from raw milk.

There is some controversy at the present as to whether cheese and butter made from sour cream or milk are capable of spreading the disease. Some people believe that souring of cream kills the Brucellae organisms and that only those products made from raw unsoured milk are capable of causing the spread of the disease.

Persons who are infected by direct contact with contaminated material are usually veterinarians, goat herders, farmers, packing house employees, and laboratory workers.

Veterinarians and dairy workers who handle infected cows and the products of an abortion from these cattle are frequently in direct contact with the organism. It is known that the placental and fetal tissues of such an abortion are occasionally loaded with the Brucella organisms and that these organisms can easily enter the body through skin abrasions, or by way of the gastrointestinal tract or pulmonary infection.

In meat packers there is a greater incidence of *Brucella suis* infection due to the fact that these people handle so much meat from pigs in packing plants. Also, it is known that the suis infection is much more virulent for man than is the *Brucella abortus* organism. The infection in these people seems to come most often from handling pork sausage and the reproductive organs of the infected animals.

Laboratory workers are the next of importance in the series of people being infected by direct contact with the Brucella organisms. The infection in these people is by way of accidental ingestion through the

gastrointestinal tract and by having abrasions or cuts on the skin through which the organisms can easily enter. Morales Oerto of Puerto Rico, by abrading the skin of human beings and inoculating these cuts with cultured organisms, produced brucellosis experimentally in man. This is probably an important portal of entry for the Brucella organisms in all persons in direct contact with the infected animals or Brucella organisms.

The incidence of brucellosis has gradually increased each year since the discovery in 1927 that the infectious abortion of cattle could be a clinical entity in humans. In 1927 there were 112 cases and in 1939 a total of 3,501 cases were reported. This increase in the number of cases is probably not due to an actual increase in the disease itself but is due to the fact that brucellosis is an endemic disease, present at all times, and that there are better and more accurate diagnostic tests than previously.

There is no age group or sex immune from brucellosis. It is less frequently diagnosed in smaller children and infants than at any age, but as Harris has suggested the cause for this is that the child is unable to give a very clear description of his symptoms and doctors do not think of the disease as often as they should.

Seventy to 90 per cent of the diagnosed cases are said to occur in males. Considering the number of cases caused by suis organism, it is obvious that brucellosis occurs often in veterinarians and meat packers, who are predominantly of the male sex, whereas those cases caused by *Brucella abortus* are found to be almost equally distributed in male and females who live in the city.

One of the greatest problems today is the stamping out of the infection among the dairy herds of the country. In the period from July 1, 1934, to April 30, 1937, the Bureau of Animal Industry tested by agglutination reaction 4,499,273 cows in the Southern states alone and found that 2,365,444 reacted positively to the test. Of this number 52.5 per cent were in infected herds; remember that if only one cow in a herd of 2,000 is infected that one cow makes the entire herd a source of brucellosis infection.

In Mexico, where the animals were tested by intradermal skin tests, 24 per cent of the cattle, 30-35 per cent of the pigs and 15-40 per cent of the goats tested, reacted positively.

The Brucella organisms are not confined to their respective hosts for *Brucella suis* is infectious for cattle and is easily spread by cows' milk. Due to its virulence a relatively small number of these organisms will cause infection in man, whereas it takes a great number of *Brucella abortus* to cause infection. Also *Brucella suis* is infective for goats as is *Brucella melitensis* for pigs and cattle.

The Brucella organisms have been demonstrated in sheep, horses, mules, dogs, wild deer, squirrels, wild buffalo, rabbits and poultry. The presence of these organisms in the lower animals is not an important source of infection to humans, *per se*, but is of considerable interest to the farmers in that it can easily be a source of infection to their herds.

Insect transmission has been suggested as one method of the spread of brucellosis. This is based on the theory that many more cases are seen during late summer and early fall when insects are most prevalent. It has been shown that the biting stable flies and mosquitoes may carry the organism. Another explanation for the greater number of cases during both summer and early fall is the fact that calving occurs most frequently in early summer and there is greater output of organisms during lactation of early months just following and hence a greater chance of infecting more people. The clinical symptoms do not appear for about 30 days after infection.

The following outline summarizes the epidemiology of Brucella infection.

Infectiousness and Methods of Transmission

- Animals to man direct contact
  - cows — farmers
  - goats — dairymen
  - swine — slaughter-house workers
  - sheep — veterinarians
  - horses
  - dogs
- Animals to man; dairy products
  - milk (raw)
  - cream
  - buttermilk
  - butter
  - cheese
  - ice cream
- Mother's milk? The organisms have been shown in human milk but no evidence of infant infection has been reported from such.
- Water—As long as animals discharge organisms from their feces, bile and urine, water supply is a potential hazard. In Michigan State College in 1939, there was an epidemic of 41 cases with one death attributed to contaminated water supply.

Distribution—World wide
- Usually endemic — Occasionally epidemic
  - 15-20 per cent of cattle in U. S. infected.
  - 10 per cent of humans infected (not all clinically ill).

Incidence
- Higher in rural regions
- Urban population not exempt—raw milk in resorts
- Greater in males—occupational?
- All ages: Congenital—infancy to old age

Incidence due to individual strains—varies with predominance of hogs, goats or cattle in given locality.

Relative virulence
1. Melitensis (goats)
2. Suis (pigs)
3. Abortus (cattle)

SYMPTOMATOLOGY

The often repeated statement that "syphilis may simulate or complicate any known disease" is equally true of brucellosis. It is a systemic disease and the organisms have been isolated from practically all tissues of the body. Due to its disseminated form, brucellosis either in acute or chronic form is capable of protean manifestations with extreme variation in duration, intensity and symptomatology.

The variegated symptomatology of brucellosis makes a definite classification of the disease very difficult and numerous classifications have been made. I shall briefly describe the types as given by Hughes. They are:

1. Malignant type with sudden onset, high fever and stormy course which may result in death.
2. Undulatory type: The most frequent.
3. Intermittent type: Insidious and generally mild.
4. Irregular, mixed and chronic varieties.

Malignant type: Infections of this nature are rare. They are characterized by sudden onset, an acute course and according to the literature, usually a fatal termination. In most cases the temperature is high and sustained with an extreme hyperpyrexia occurring just before death. There is great prostration, severe headache, backache, marked anorexia and usually true rigors. The spleen is likely to be greatly enlarged. The duration of these cases may be two or three weeks. Some cases of acute brucellosis of this type which pass into chronic brucellosis, have been described.

Undulatory type: This type of brucellosis is most often due to *Brucella melitensis.* The case commences with vague aches, pains, weakness, anorexia and headache, and is often first diagnosed as "intestinal" or "summer flu." If temperature records are kept, one sees a slowly forming wave-like curve, with intervening periods of apyrexia. Scarcely is the patient over one such attack of fever and aches before he starts another such bout. This may go on and on seemingly indefinitely.

Intermittent type: Here is found those cases of brucellosis with insidious onset and a fever curve gradually forming a long rolling wave. The fever lasts for six or seven weeks, accompanied by the usual signs and symptoms of brucellosis, followed by a remission of all fever and clinical symptoms.

Irregular type: Under this type of brucellosis is placed the ambulatory patient in whom the symptoms are mild, such as weakness, lack of endurance, and irritability, but the patient is up and about his work. Also here occurs the asymptomatic or latent type in which the organisms have

invaded the body and are present as such but make their appearance as episodes of fever and illness when bodily resistance is lowered by some cause. Only too often the patient thinks he has the "flu."

The classical clinical picture of undulatory, remittent, intermittent fever, drenching sweats, chills, headache, backache, muscle and joint pains, weakness, loss of weight, palpable spleen (sometimes liver), leukopenia with lymphocytosis and secondary anemia and a skin eruption pertain chiefly to the acute febrile type of the disease.

The chronic type of brucellosis is usually ushered in with the prodromal symptoms of any febrile disease, as weakness, irritability, headache, vague aches and pains, slight cold, hacking cough and the appearance of fever. Anorexia, chilliness or rigors, constipation, marked weight loss, stiff or painful joints and backache commonly follow. As the disease progresses the fever rises more and more. In the morning the patient may be afebrile but as the day passes on the fever rises and the patient experiences drenching sweats, in such a degree as to cause a change of clothing in many cases.

McGinty and Gambrell have listed over one hundred and fifty manifestations of chronic brucellosis, but the principal ones present in the majority of cases were weakness, low grade fever, sweating, chilliness, and lack of objective physical findings.

A high proportion of cases reported by Hughes and Craig and later by Evans gave only vague symptoms of aches, pains, exhaustability, insomnia, and feverishness. These were patients with chronic brucellosis who had previously been diagnosed as "neurasthenics"; a warning to avoid the diagnosis of neurasthenia or neurosis without a careful survey of the patient.

There have been a few special symptoms brought out by Manchester that I would like to call attention to. Manchester took 100 cases drawn from rural groups of Ohio, in which part of the patients had been exposed to cows directly and part had been or were drinking raw milk; 38 per cent of these reacted positively and 62 per cent negatively. It was found that 29 per cent of his 38 per cent gave a history of "recurrent grippe". Also these positive reactors gave a history of chronic low grade fever, night sweats, colds, angina pectoris, dyspnea, joint and muscle pains; in the negative group palpitation, chronic exhaustion, easy fatigability, nervousness, and gastrointestinal complaints occurred likewise.

One symptom found in this group of cases, and not previously mentioned, is that of coronary disease. This syndrome occurred in 26 per cent of the postive skin reactors and in 3.5 per cent of the negative reactors. The usual age of onset was 46 years and the average duration of symptoms was 6.5 years. The coronary or anginal syndrome usually follows an acute exacerbation of the brucellosis in which there has occurred a coronary arteritis with damage to the endothelium of the blood vessels and localized extravasations of blood. In many cases the coronary and anginal attacks were the first signs of brucellosis to be manifested.

Rheumatism or rheumatic pains are common accompaniments of brucellosis. In Manchester's series 55 per cent of the skin positive group and 20 per cent of the skin negative group showed widespread manifestations affecting most commonly the small joints of the hands, the wrists, the lumbar vertebrae and the knees. Swelling without redness or pain may occur; a few individuals show changes comparable with rheumatoid arthritis. Goldfain, of 50 people with arthritis, found 31 having active brucellosis. Nine (29 per cent) had atrophic arthritis, five had hypertropic arthritis, one had an anklyosing spondylitis and seven had chronic fibrositis.

PHYSICAL SIGNS

The most characteristic feature of the physical signs of brucellosis is the lack of such signs. Many of the patients do not appear to be ill and except for the pallor, weakness and tired appearance they are comfortable and mentally alert. Even though the patient may be severely ill his

mentality is usually clear. The tongue is coated, the pharyngeal mucosa injected and rales may be heard in the chest, especially in the pulmonary bronchopneumonic type. Upon palpation, the abdomen is tender in about 20 per cent of cases and is usually accompanied by pain. A skin eruption similar to the typhoid rash may occur. It is usually a small pink macular rash but sometimes may be maculo-papular.

DIAGNOSIS

The final and accurate diagnosis of brucellosis depends upon the use of laboratory methods, of which the most important are:

1. Blood count.
2. Cultures of blood, urine, feces, and all exudates.
3. Animal inoculation test.
4. Agglutination test.
5. Intracutaneous skin test.
6. Opsonocytophagic index.
7. Complement fixation test.

Before turning to the laboratory as an aid to diagnosis, one should first obtain a most careful, chronologic and complete history from the patient with special emphasis on his occupation, as the highest incidence of this disease is in those people closely associated with or in direct contact with livestock or dairy products and meat packing industries. Also the patient should be carefully questioned as to the source of his milk, butter and cheese supply and the whereabouts of his residence.

Complete hematocytologic studies do not show anything peculiar or diagnostic of brucellosis. It is true that in acute brucellosis there is a leukopenia which will tend to limit the diagnosis somewhat to those diseases with a leukopenia, but in chronic brucellosis there may be a leukopenia, a normal leukocyte count and in some cases a leukocytosis. McIntire says that the white count is normal in one-half of the cases, leukopenia in one-third and leukocytosis in one-sixth.

Calder directs attention to the occurrence of lymphocytogenesis in all cases of brucellosis. It is the most striking and constant feature of the blood picture in all the manifestations of brucellosis.

Lymphocytosis is evidenced by an increase in percentage and absolute number of lymphocytes—a lymphocytic "shift-to-the-left" so to speak.

Also Calder called attention to a mild hyperchromic macrocytic anemia, which was present in a great number of cases. He attributed this anemia to liver damage occurring during the disease. He also noted incomplete and delayed blood clotting without a thrombocytopenia, which suggest further study for liver damage.

To make a definite and unretractable diagnosis of brucellosis, it must be made by culturing the organism from the infected person. Cultures may be made from blood, urine, feces, spinal fluid, dermal eruptions, and pus of localized abscesses.

To make blood cultures one must use the most careful aseptic technic. Fifteen cubic centimeters of whole blood are drawn from the patient and placed in a flask containing 4 c.c. of 2.5 per cent sodium citrate solution. Into four flasks, each of which contains 100 c.c. of liver infusion broth at pH of 6.8, 2 c.c. of the citrated blood are placed. Two of the flasks are incubated under aerobic atmospheric room conditions at 37° C. and two of them are incubated in an atmosphere of 10 per cent carbon dioxide, for four days. After the fourth day, smears are made daily from the cultures and stained with gram stain for presence of the organisms. If after 10 days no organisms are found, 5 c.c. of the original culture are transplanted to 100 c.c. of liver broth infusion every three days for two weeks. Original culture and transplants are examined for three weeks before being reported as negative.

Blood cultures should be made frequently as in many cases with low grade fever there is a transient bacteremia. In the acute cases with fever, positive cultures are most frequently obtained. The melitensis organism seems to be the easiest to cultivate, and if it is the causal organism, the blood culture made during a pyrexial attack will invariably be positive.

At the present time there are very few laboratories equipped with facilities or personnel adequate for blood cultures diagnostic of brucellosis as there must be special media used and special precautions taken to secure positive cultures.

In the culture diagnosis from urine, bile, stool, pus and spinal fluid the materials are prepared for culture according to standard methods. Such material is inoculated on plates of liver agar containing gentian violet concentration of 1:200,000. Half the plates are incubated in carbon dioxide for three days, half in pure atmosphere and then examined by slide smear and gram stain for the organisms.

Animal inoculation method as described by Poston is that three guinea pigs are used for each patient, and in two of the pigs 2 c.c. of the patient's citrated blood are injected intraperitoneally and in one pig 1 c.c. of the patient's citrated blood is injected in the groin. Examination of the animals is carefully done daily and two months after the inoculation the animals are tested for specific agglutinins and positive skin reactions by use of the Huddleson brucellergen test at an interval of every few days. When both tests become positive the animals are killed and blood and tissue culture procedures carried out, as previously described. The animals that remain negative are killed four and one-half months after inoculation and blood and tissue culture procedures are followed.

It has been noted that many animals do not react positively until sixteen to eighteen weeks after inoculation, hence the test is of little value in the cases where a quick diagnosis is wanted.

Agglutination test: The agglutination test is one of the most widely used and little understood of all tests used. Like the Widal test it is simply a test for the presence of specific agglutinins in the blood and not for the presence of organisms. If agglutinins are thought of as an evidence of resistance to infection, formed in response to infection, rather than as evidence of infection itself, confusion will be lessened. The presence of agglutinins indicates absence of resistance.

The agglutination test is one of the most reliable diagnostic procedures in use today, especially in the cases of acute brucellosis where the agglutinins may appear in the blood as early as the fifth day of illness, with a high serum titer. Generally speaking, the specific agglutinins do not appear in very high titer until the second week of the disease, and in some cases do not appear until extremely late in the illness. Simpson says that in 6 per cent of cases the agglutinins may be entirely absent even in the face of a positive blood culture.

Hartsock in his series found that the agglutinins appeared in the blood in from one to three weeks and in the acute febrile stage may reach a titer of 1:10,000.

In the interpretation of an agglutination test anything over 1:80 should be diagnostic and any agglutination of 1:10-1:40 should stimulate further serologic work on the patient. Frequent tests should be made and in the face of an ever increasing titer, Simpson says a diagnosis of active brucellosis can be made, and conversely if titers are gradually decreasing Huddleson says the patient is recovering.

Chronic brucellosis is difficult to diagnose by use of the agglutination reaction due to repeated negative and low titer return. In a group of 28 proved cases Simpson found 4 per cent giving negative agglutination reaction.

Meyer and his associates tested 3,226 persons, such as veterinarians, meat packers, and dairy workers who are in constant and direct contact with the disease but have no active manifestations of brucellosis themselves, and found that 14.7 per cent had a positive agglutination reaction of 1:40 or above and in one case a titer of 1:5000.

Nicolle and Comte (1910) and Zinsser and Bayne-Jones (1934) observed the agglutination of Brucella organisms by the serum of a typhus fever patient. Also Simpson has shown the cross agglutination power of *Past. tularensis* and Brucella. At times this cross agglutination gives much confusion to the picture but in time as the

disease progresses the Brucella agglutination titer will usually rise and the other antigens of tularemia and typhus fever will remain the same or decrease.

Although the agglutination test is most helpful in diagnosis it is not perfect and is subject to the following limitations:

1. The agglutination titer may remain at a high level years after recovery from the disease.

2. Some individuals develop agglutinins after exposure to the illness with no definite signs of sickness.

3. The agglutinin titer fluctuates widely on repeated testing.

4. The possible agglutination reactions with *Past. tularensis* and *B. proteus X* 19.

5. All blood to be tested must be drawn before any cutaneous tests are performed, for Evans found that in a number of cases, brucellergen caused an agglutinin response not compatible with the patients tested.

There are two methods for running the agglutination test and they are: (1) the test tube method and (2) the rapid method.

The intradermal skin test: This skin test is used to determine the cutaneous hypersensitivity to Brucella antigens. A positive reaction is accepted as a past or present infection, although there are many cases reported where this test is negative while the blood culture is positive.

The test is performed by injecting 0.1 c.c. of brucellergen or 0.1 c.c. of 1 c.c. of commercial standard antigen diluted with 9 c.c. of normal saline into the skin of the forearm, and the arm examined 48 hours later. A positive test is measured by the development of a circumscribed erythematous, indurated area 0.5 to 3 inches (1.9—7.5 cms.) in diameter, appearing at its maximal intensity 48 hours after inoculation. In frankly positive tests the induration may persist for several days and in hypersensitive individuals a mild or severe systemic reaction may appear, in such cases a regional lymphangitis and axillary node enlargement may follow. Also an exacerbation of symptoms and an area of focal necrosis sometimes occur.

A pseudopositive test in which there is great redness at the end of 24 hours but disappearing in 48 hours may occur. A false positive test occurs in a person hypersensitive to a foreign protein and the reaction is no different from a true positive reading.

False negative tests do occur also, for in one patient with marked respiratory symptoms and a positive agglutination test of 1:10,000 the skin test was reported as negative.

In a series of 155 cases with positive skin tests, Keller, Pharris and Gaub found that 12 or 7.8 per cent showed positive agglutination tests, suggesting the greater efficiency of the cutaneous test. Of these 155 cases checked with the opsonocytophagic test it was found that 51.6 per cent were affected without immunity; 8.4 per cent were positively immune and 40.0 per cent were actively immune.

The intradermal skin test has a great value in the help of diagnosing the presence of brucellosis, but as with the agglutination reaction it has certain limitations. These are:

1. A positive test does not indicate the presence of active brucellosis for hypersensitiveness once acquired after symptomatic or subclinical infection may persist for years.

2. A positive test does not mean that the symptoms from which the patient is suffering now is due to brucellosis, for positive tests have been found in patients whose diseases were later diagnosed as tuberculosis, Hodgkin's disease, typhoid fever, malaria, and subacute streptococcal endocarditis.

3. A positive test unless accompanied by regional lymphangitis and adenitis or an exacerbation of the patient's symptoms, does not denote infection but suggests the possibility of active infection or active immunity. An opsonocytophagic test has to be made to determine the degree of the patient's immunity.

4. The skin test may be positive in that group of people such as veterinarians, meat packers, and dairy workers who are in con-

stant contact with Bang's bacillus but are not infected.

5. Evans says that the skin test is not as accurate as the agglutination test for the allergy appears later in the disease and lasts for a longer period of time, after recovery of the patient. Whereas, Gould and Huddleson say that in the face of a negative test that brucellosis can be ruled out.

The antigens used in the intracutaneous skin test are: (1) a heat killed suspension of brucella in physiologic saline solution (a vaccine); (2) a suspensoid of nucleoproteins isolated from brucella by chemical separation known as brucellergen; (3) commercial vaccine—diluted 1 c.c. with 9 c.c. of normal saline.

The opsonocytophagic test: The opsonocytophagic reaction should be used in conjunction with either the agglutinins or intradermal tests to determine the immunity status of an individual giving positive tests by either or both methods.

The technic for making the opsonocytophagic test consists in collecting 5 c.c. of the patient's blood in a vial containing 0.2 c.c. of 20 per cent sodium citrate. Then take 0.1 c.c. of a saline suspension of living brucella which have been grown for 48 hours on liver infusion broth agar. The mixture is incubated for 30 minutes at 37° C. A smear is then made from the incubated mixture and stained with 0.5 c.c. of Hasting's stain for 30 seconds, after which 1 c.c. of distilled water pH 6.8 is added for one minute. The slide is then gently washed with distilled water and dried quickly in front of an electric fan, and examined microscopically.

A total of 25 leukocytes is counted, and the number of phagocytized Brucella organisms per cell is tabulated as follows:

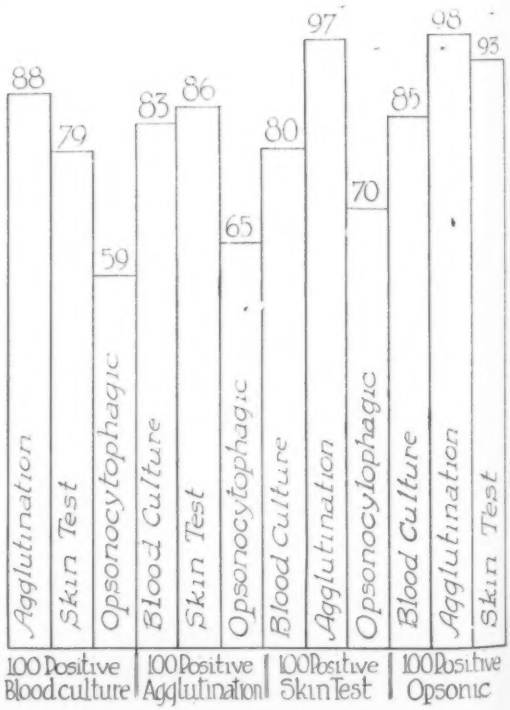
1. No organisms present—no immunity.
2. 1-20 organisms present—slight immunity.
3. 20-40 organisms present—moderate immunity.
4. 40-above organisms present—marked immunity.

The percentages of cells showing phagocytosis is tabulated according to their respective groups and if 40 per cent or less cells show phagocytosis the person is said to be infected, 40-50 per cent show marked phagocytic action then the person is questionably infected or immune. If 60 per cent show marked phagocytosis the person is said to be immune. The opsonocytophagic test is a method of measuring the body's resistance to disease.

The limitations to the opsonocytophagic test are:

1. It must be performed with blood not over six hours old.
2. It should be performed by those people well trained in the work for the test itself seems to give too high a percentage of immunity.
3. The test is not as reliable as other tests and should be used in conjunction with the agglutination or intradermal skin test plus careful consideration of the patient's clinical course and symptomatology.

The following charts, prepared by Castaneda, Favor and Vilez, show the comparative value of the diagnostic tests or procedures for brucellosis.



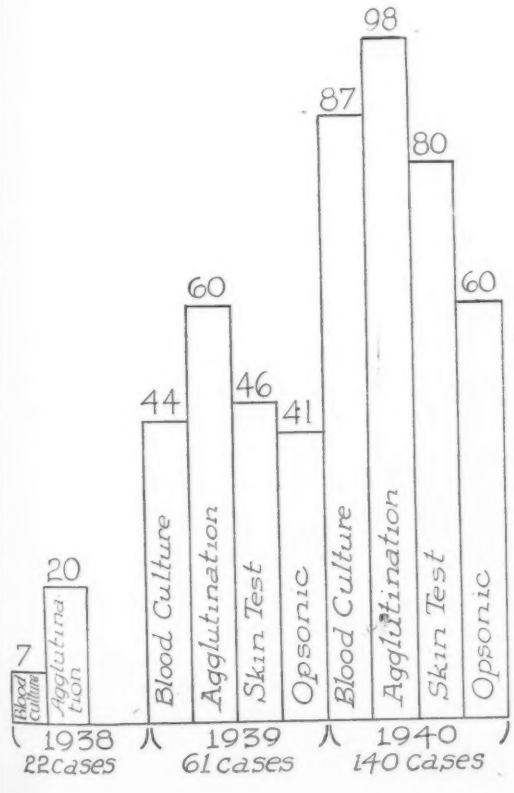
By comparison of the charts it can be seen that the Huddleson agglutination test is the most accurate diagnostic procedure, followed closely by the skin test, blood culture and opsonocytophagic tests.

For one to make a definite diagnosis of brucellosis he should use at least two of the described procedures, preferably the agglutination and skin tests, (and still miss 10 per cent), and wherever possible the blood culture.

There are additional measures sometimes used as diagnostic aids in brucellosis, these are:

1. Complement-fixation test: Due to the fact that this test requires so much more time and well trained technicians, and also that it does not become positive before the agglutination test (which is much simpler to do) this test has fallen into disuse.

2. The injection of typhoid or paratyphoid vaccine sometimes will cause a higher titer of agglutinins and a positive skin test to appear.



3. Sulfanilamide has been given to some patients and a high increase in the opsonocytophagic index has resulted. This work was done by Welch, Wentworth and Mickle, who are of the opinion that it has great diagnostic value.

DIFFERENTIAL DIAGNOSIS

If brucellosis is given careful consideration in the differential diagnosis of all febrile diseases especially those such as typhoid fever, typhus fever, relapsing fever, tuberculosis, malaria, influenza, chronic bronchitis, pyelitis, rheumatic fever, or bacterial endocarditis, in which the diagnostic criteria is not convincing then the disease will be found much more frequently than thought to be at the present time.

I would like to give a few of the more common differentialities and a statement about each.

Typhoid and Paratyphoid Fever: The acute onset, toxicity of patient, diarrhea, tympanitis, sustained fever and absence of sweats, with a positive Widal reaction tend to rule out brucellosis.

Influenza: This misdiagnosis is due to the fact that physicians have a tendency to call all undetermined fevers "flu".

Tuberculosis: A careful history, including family history plus the x-ray findings usually diagnose tuberculosis.

Malaria: The regularly repeated chills and fever which sometime occur in brucellosis may suggest malaria, but carefully prepared and examined blood smears will either clinch or rule out the diagnosis of malaria.

Pyogenic Septicemia: The neutrophilic leukocytosis that usually occurs in this type of infection tends to rule out brucellosis. Blood culture must be made.

Subacute Bacterial Endocarditis: The weakness, remitting fever, loss of weight and anemia are characteristics common to both. However, Brucella organisms may cause an endocarditis, and recourse must be had to blood counts, blood cultures, agglutination tests, and other laboratory procedures.

Acute Rheumatic Fever: The onset and course of acute rheumatic fevers are in

striking contrast to the insidious onset and the subacute course of brucellosis.

Tularemia: The clinical characteristics of the ulcero-glandular, glandular, and oculoglandular types of tularemia are so striking that diagnosis of the infections occurs with ease. But the typhoid type brings on confusion due to the cross agglutination phenomena present. However, the Tulrense agglutination titer will be of much higher value than the Brucella, and the intradermal test will be negative for brucellosis.

Appendicitis-Cholecystitis: Fever, abdominal pain and localized tenderness are the misleading features. In many cases operation has been readily advised. Therefore, a careful complete history with an adequate study of the blood count is indicated.

Infections of the Urogenital Tract: Frequent and painful micturition and pus in the urine as not uncommon features of brucellosis. These occur late in the infective period or fastigium and a careful history will usually lead to a generalized infection with manifestations.

PROGNOSIS

The prognosis of brucellosis is good, the death rate being around 3 per cent. *Brucella abortus* offers the best prognosis while on the other hand *Brucella suis* gives the worst prognosis.

SUMMARY

A short review of the history of brucellosis is given and the epidemiology of the disease more thoroughly discussed. The attempt has been made to bring to the front such methods of transmission of the disease as insect carriers and water-borne routes. These factors are definitely of prime importance to cattle farmers and to sanitary health engineers associated with the Army.

The procedures for establishing the diagnosis of brucellosis have changed very little in the past few years and the diagnostician must depend upon: (1) blood cultures, (2) agglutination tests, (3) cutaneous test, and (4) opsonocytophagic index test definitely to settle the questionable diagnosis. The limitations of all these tests have been explained not one is even nearly 100 per cent perfect. At least two tests should be positive to diagnose a case and still 10 per cent of the cases will be missed.

Until better controlled, brucellosis should be considered a scourge of mankind that is becoming more and more prevalent. It should be and will be regarded a major health problem considering its effect on chronic morbidity.

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A MEETING TO DISCUSS BILL S. 1161

On Wednesday, September 1, there was held in the University Room of the Roosevelt Hotel a very large well attended meeting of certain groups interested in bill S. 1161, to discuss the important features of this revolutionary proposed Act. The groups consisted of representative physicians, dentists, wholesale and retail druggists, and nurses. It was called by Mr. C. A. Iorns, Chairman of the Domestic Commerce Committee of the New Orleans Association of Commerce, who acted as presiding officer. Speeches were made by representatives of the various groups including Dr. C. C. deGravelles, President of the Louisiana State Medical Society, and Dr. Val H. Fuchs, President-Elect of the organization. The speakers to a man denounced the bill. Senator Allen J. Ellender and Representative Paul Maloney were at the speakers' table and spoke at the conclusion of the other addresses. Senator Ellender brought out a very excellent point which it would be advisable for doctors to take to heart, namely, that the physicians in the state have not shown sufficient interest in this bill and have not expressed themselves with force and vigor to their several governmental legislators.

It may be that the evils of the bill are so outstanding that the medical profession feels that the bill will never pass Congress. However, while this particular bill might not be passed, one somewhat less radical and somewhat less tinged with demagoguery might be presented to Congress as a substitute. Doctors of the state should definitely indicate a disapproval of the present bill, and by so doing would indirectly let their representatives in Congress know that they were opposed to any form of Federal medicine or the regimentation of medical services in any form.

THE SUPPLY OF DRUGS

A recent release by the War Production Board should be of interest to the medical profession. In this account of the drug situation information is given about those medicaments which are scarce and data are presented concerning efforts to accumulate a stock sufficient for the needs of the country.

In the early part of the war there was a great shortage of many drugs due to the demands of lend-lease and of the Army. Most of the critical drugs at that time are now being supplied through the seeking out of new sources of material at home and abroad, and the construction of new facilities for their production. There still remains a certain number of drugs which are lacking or the supply is very small. Quinine,

of course, is the outstanding example. Quinine is practically unobtainable except the small portion that has come from Bolivia so that the use of quinine is restricted to its anti-malarial use and the alkaloid, quinidine, to certain heart conditions. The stock of quinidine is virtually exhausted, incidentally. To replace quinine, totaquine bark is being imported from Central America in relatively large quantities. Unfortunately the bark varies considerably in its alkaloid content and it is an expensive process to obtain the alkaloids. Its cost is much more than quinine but every doctor is earnestly urged not by the War Production Board particularly but by the Army, Navy and other agencies in Washington to use totaquine instead of quinine in the treatment of malaria. There still is a fair amount of quinine in the South where no efforts were made to obtain the stocks that lie on druggists' shelves but elsewhere throughout the country the druggists have been called upon and have responded loyally to the pooling of their quinine. Totaquine is a safe, efficient anti-malarial and its effectiveness is practically equal to quinine. Quinacrine, the synthetic agent popularly known as atabrine, is now being produced in large amounts, some six of the big drug firms have started to manufacture it. This also is recommended to be used by physicians in the treatment of patients in this country with malaria so that quinine may be conserved for the treatment of estivo-autumnal malaria in the troops in the tropics.

Agar is extremely short as this sea weed came almost entirely from Japan. It can now be used only in the preparation of bacteriologic media, and there is not enough of it even for this one purpose. It is recommended that doctors use psyllium seed as a substitute to increase intestinal bulk. Tannic acid is restricted in its use to burn preparations only. Incidentally, recent investigations have shown that tannic acid method of treatment of burns is not as satisfactory as are other methods.

Bismuth is likewise restricted. Doctors are asked to use a substitute for bismuth subnitrate and bismuth subcarbonate or other bismuth containing salts. Magnesium trisilicate is suggested as an excellent substitute. Bismuth for antisyphilitic therapy is completely unrestricted.

Phenol is a critical war material. The amount allotted to the manufacturers of salicylates has been considerably reduced. Physicians are again asked to conserve as much as possible the use of aspirin, phenyl salicylate, sodium salicylate and methyl salicylate. Cresol is used by the Army in quantities so great that the "compound solution of cresol" is no longer available.

Penicillin is now being manufactured but the amount that is being produced is so small that it is impossible to put it on the market except for limited use in clinical investigations. The entire supply is used by the armed forces. Alcohol, sugar and glycerine are critical commodities. Alcohol is rigidly curtailed in order to produce smokeless powder and synthetic rubber. Glycerine is used to produce munitions. The sugar situation is materially improved but again the doctors are asked to use tablet or capsule forms of administering medicaments rather than fluid preparations of elixirs, syrups and solutions.

There has been a tremendous increase in the demand for the sulfonamides and vitamins and at one time the situation was most dangerous. However, all of these products are now being produced in quantities sufficient for civilian needs. The same statement applies to caffeine and theobromine preparations. Arsenic preparations were available in barely sufficient quantities to meet the demands but production has been so much expanded that there is an ample amount available. The doctor is requested to help conserve mercury which is required in large quantities for explosives. Where ever possible use other antiseptics than mercurial.

Belladonna is imported from central Europe. The supply was totally inadequate a year and a half ago but now that belladonna plants are being raised through projects sponsored by the Department of Agriculture, the War Production Board and Defense Supplies Corporation, there has re-

sulted the production of an adequate supply of the belladonna plant.

Lastly, there exists a very real problem in the shortage of container and package materials. There is not a sufficient supply of metal, plastics, glass and paperboard container to meet the demands. Here the physician can assist in minimizing this need by prescribing the largest practical size container of the drug, by reclaiming glass, glassware and bottles as well as metal containers.

The outlook for the future is excellent except in a very few instances. Drugs considered essential to military and civilian practice of medicine are now being made available in greatly increased quantities. However, in those medicaments in which there is shortage the physician is earnestly urged to follow out some of the suggestions that have been indicated above.

HIATUS HERNIA

Diaphragmatic hernia has been extensively discussed in the literature in the past thirty years. In spite of this fact the clinician often fails to appreciate the importance of the disease in the differential diagnosis of thoracic and abdominal disorders. It is for this reason that Ohler and Ritvo* have studied and reported upon a series of cases, 136, that they have observed.

The cause of diaphragmatic hernia is not known. Most students of the disorder believe that it is due to some congenital defect, in part basing their contention on the fact that duodenal diverticulum, a congenital defect, is so frequently associated with hiatus hernia. Other factors may exaggerate a congenital defect which has been symptomless, such as loss of weight, increased intra-abdominal tension and advancing age.

The symptoms may be in the chest. Substernal pain is often present, which pain may be severe, be referred to the shoulder and down the left arm and in every way mimic angina pectoris. Aside from the substernal pain, there may be other symptoms which would suggest a cardiac condition, such as dyspnea and palpitation occurring often when the patient is in the dorsal position and coming on during or immediately after meals. In this series of cases studied by Ohler and Ritvo in 104 carefully analyzed cases the symptoms were suggestive of coronary disease in approximately 12 per cent of the patients. The symptoms may resemble closely those of gallbladder disease. Here the percentage is slightly under 23, while more than one-half of the patients have gastrointestinal symptoms which are quite marked. Gastrointestinal symptoms include epigastric pain, nausea, heart burn, belching, dysphagia and anorexia. Patients frequently, over long periods of time, have these gastric disturbances which instead of arising below the diaphragm are actually above this muscular sheet. Most typical symptoms are epigastric discomfort and a sensation of fulness appearing rather promptly after eating or even during meals.

It is pointed out that the expressions of hiatus hernia are most variable and inconstant, so clinical diagnosis is often very difficult and the roentgenologist must be called upon to make the diagnosis. The ordinary gastrointestinal series, because of the smallness of the lesion, may fail to disclose the cause of the trouble. If it is suspected then special studies must be made, such as fluoroscopic examination of the patient in different positions, after deep breathing or with pressure on the abdomen.

In the management of the patients who have hiathus hernia, if they are discovered by chance and are symptomless, no treatment is required. One the whole, medical treatment is probably the best for patients with small lesions. A bland diet with 4-6 feedings a day is indicated. Food should not be taken before bedtime. For the night pain, sleeping at an angle of 45 degrees is recommended and needless to state alkalies and antispasmodic drugs are often beneficial. If these medical measures fail to relieve the patients, then the more serious surgical procedures must be considered.

In older individuals in whom the diagnosis of coronary arterial disease with angina

*Ohler, W. Richard, and Ritvo, Max; Diaphragmatic (hiatus) hernia, New England J. M., 229:191, 1943.

pectoris seems to be most logical, a gastro-intestinal study is indicated, particularly if these persons have pain immediately after eating and if it is relieved by the erect posture or walking about for a short time. There has been many a man whose physical activities have been decidedly limited because of spurious angina when the underlying pathologic condition was that of hiatus hernia.

ORGANIZATION SECTION

The Executive Committee dedicates this page to the members of the Louisiana State Medical Society, feeling that a proper discussion of salient issues will contribute to the understanding and fortification of our Society.

An informed profession should be a wise one.

STATE SOCIETY DUES

At the last meeting of the House of Delegates, held in Baton Rouge, the dues to the State Society were raised to $25.00 per year. Previously the dues had been $8.50 per year. This represents quite an increase but one that the House of Delegates felt was justified under the existing circumstances.

The dues you pay to the State Society must cover a number of things. It covers your subscription to the New Orleans Medical and Surgical Journal, one dollar per member is allocated to the Indigent Physicians Fund, fifty cents to the Entertainment Fund, and fifty cents to the Medical Defense Fund. Formerly this left about five dollars per member to cover the general expenses of the Society. In previous years this has afforded a balanced budget, but has not permitted the general fund to maintain a balance to meet any emergency that might arise.

At this same meeting of the House of Delegates, the dues of members in Military Service were deleted, so that the paid membership of the Society will be materially reduced. For 1943 after deducting those in the Military Service there were 1,261 regular members whose dues amounted to $10,718.50. This amount plus interest on U. S. A. Treasury Bonds and reimbursement from New Orleans Medical and Surgical Journal of $1,320.00 for salaries of stenographers, makes the total estimated income for 1943, $12,137.50. With an estimated budget for 1943 of $13,343.81 for ordinary expenses, we will be left with a deficit of approximately $1,206.31. This deficit is estimated from ordinary expenses and, of course, will be larger should any emergency arise. At present the Society must borrow money to meet that deficit.

Obviously such a set up necessitated raising the dues since that is our only source of income. A jump to $25.00 per year may be considered too much, but certainly doctors can afford that amount at this time and among other things permit the general fund of the Society to build up a reserve.

Many members have asked what is to be done with the $25.00 annual dues. If the activities and benefits of the Society are to stay on an $8.50 level, they will all resent paying the increased dues but if with the additional income the work of the Society is increased so that each member can see actual concrete benefits derived therefrom, there will be no objection to paying the increased dues. After all the strength of our Medical Society depends more upon the number of members than upon any bank balance. A Society which enrolls practically every doctor in the state can exert more influence than a Society enrolling half the doctors, regardless of the amount of dues paid. The extent of the enrollment depends in a large measure upon a satisfied membership.

There are a number of things that could be done with additional revenues. A reasonable surplus should be built up for the general fund, so that we would be prepared for any emergency that might arise. There are a number of activities of the Society carried on by its members and requiring an

outlay of their personal funds. This applies particularly to the members of your executive committee and councilors who must make three or more trips to New Orleans each year at their own expense. These doctors should not be expected to sacrifice their time and their money to attend to your business but should have their necessary expenses paid.

We have a full time Secretary and Treasurer who should be supplied with sufficient funds to cover the state at least twice each year. It should be expected that he will repeatedly visit district and parish societies and even doctors personally, acquainting them with the affairs of the Society and learning from them what they want done. A personal touch of this type would help wonderfully in building up the enthusiasm of our members. Dr. Doe practicing in some small community needs such a contact far more than the man in a large city but heretofore he has not had that contact. True he may read the State Journal and may have some contacts at state meetings but otherwise he is practically a step-child.

For sometime we have tried to work out a plan whereby a library service could be made available to the doctors of the state. Such a service will call for the expenditure of a certain amount of money which should be now available. If and when a library service could be made available to every doctor in the state and particularly to the doctors in smaller communities it will be of great benefit.

The State Society also has certain special funds as the Indigent Physicians Fund and the Medical Defense Fund that need increased reserves so as to make them more effective. With the increase in dues a larger amount could be allocated to these funds and thus make them of greater value.

These are only a few of the things that could be accomplished by the State Society with additional revenues. Certainly it is not asking too much of our members to pay about fifty cents a week into their state organization with the idea of making it a more effective organization.

HOW BEST TO OPPOSE SOCIALIZATION OF THE PRACTICE OF MEDICINE

For a number of years the medical profession has had constantly before it the threat of socialized medicine or the political control of the practice of medicine. Since the report of the committee on the cost of medical care was published, there has been a persistent demand from certain groups for a change in the form of medical practice supposedly to make adequate medical service available to the low income group. At the present time these efforts have culminated in the introduction of the Wagner-Murray-Dingell Bill—S. 1161—a pernicious piece of legislation placing the entire practice of medicine under political control.

The medical profession has consistently opposed these various attempts to socialize or politicalize the practice of medicine. We have done so because we realize that such plans can only result in an inferior quality of medical service, rendered at greater ultimate cost to the taxpayer. No one can seriously question the correctness of our stand on those grounds, but there has always been a weak link in our opposition, namely that we have offered no plan to correct the known evident defects in the present distribution of medical care. Opposition to any measure such as the Wagner-Murray Dingell Bill, must be constructive and not simply negative if it is to meet with ultimate success.

Certainly one cannot say that all is well with the distribution of medical care in the State of Louisiana. It is true that we have a system of Charity Hospitals which are rendering a great service and fulfill a certain definite need, but there is room for certain improvements in the quality of that service. There still remains though a large group of people not quite in the charity group yet not able to carry the burden of a serious illness. These people do not want charity service but when confronted with a medical and hospital bill of $200.00 or $300.00 that cannot be paid they must either accept charity or assume a debt that will require months to liquidate provided

they fortunately escape another doctor and hospital bill in the meantime. Many of these people are eager for some change in medical practice which will make available to them medical care that they can pay for and not so-called charity treatment.

There is another large group of people, truly indigent who usually go without ordinary medical care for simple illness or preventive measures. If they live in a large city where outpatient clinics are active they can secure treatment for an illness not requiring hospitalization but if they are in smaller towns or in the country they either go without or have gratuitous treatment from a local physician. Certainly these people feel the necessity for some change which will make adequate medical care available to them and therefore they will accept and support measures in the nature of the Wagner-Murray-Dingell Bill and who could blame them.

These two groups make up quite a large percentage of the population, almost a controlling voting percentage and it is therefore to them that the politician appeals. Ultimately they will get some change in medical practice, a change given to them by the politicians or by a thoughtful wide awake medical profession. Thus far the politicians have been offering the appealing plans. True various plans have been tried in certain localities by medical societies, county or state but these have not been very general.

Just recently when talking to a group of laymen seeking their cooperation in opposing the Wagner-Murray-Dingell Bill, I was confronted with this reply, "Yes Doctor, we are opposed to this bill and any other scheme of socialization, but what plans have you whereby the low income group can secure adequately medical care." That is the urgent question before the medical profession. We must see that everyone is able to secure adequate medical care under some plan of which we approve. If this is not done by us, the Wagner-Murray-Dingell Bill or a similar bill will be passed, whether we like it or not. Our position will be much stronger and perhaps lead to ultimate success if, in addition to opposing such measures as the Wagner-Murray-Dingell Bill, we offer some constructive plan for the solution of the question.

TRANSACTIONS OF ORLEANS PARISH MEDICAL SOCIETY

October 4 Board of Directors, Orleans Parish Medical Society, 8 p. m.

October 5 Eye, Ear, Nose and Throat staff, 8 p. m.

October 6 Clinico-pathologic Conference, Charity Hospital Morgue Amphitheater, 1:30 p. m.
Mercy Hospital Staff, 8 p. m.

October 7 Clinico-pathologic Conference, Touro Infirmary, 11:15 a. m. to 12:15 p. m.
Executive Committee, Baptist Hospital, 8 p. m.

October 11 Fourth Quarterly and Executive Meeting, Orleans Parish Medical Society, 8 p. m.

October 13 Clinico-pathologic Conference, Charity Hospital Morgue Amphitheater, 1:30 p. m.
Clinico-pathologic Conference, Marine Hospital, 7:30 p. m.
Touro Infirmary Staff, 8 p. m.
Women's Auxiliary, Orleans Parish Medical Society, Orleans Club, 3 p. m.

October 14 New Orleans Hospital Council.

October 15 I. C. R. R. Hospital Staff, 12:30 p. m.

October 18 Hotel Dieu Staff, 8 p. m.
Clinico-pathologic Conference, Baptist Hospital, 8 p. m.

October 19 Charity Hospital Medical Staff, 8 staff.

October 20 Clinico-pathologic Conference, Charity Hospital Morgue Amphitheater, 1:30 p. m.
Charity Hospital Surgical Staff, 8 p. m.
Clinico-pathologic Conference, Hotel Dieu, 8:15 p. m.

October 21 Clinico-pathologic Conference, Touro Infirmary, 11:15 a. m. to 12:15 p. m.

October 26 Baptist Hospital Staff, 8 p. m.

October 27 Clinico-pathologic Conference, Charity Hospital Morgue Ampitheater, 1:30 p. m.

Clinico-pathologic Conference, Marine Hospital, 7:30 p. m.
Catholic Physicians' Guild, 8 p. m.
French Hospital Staff, 8 p. m.
October 28 Clinico-pathologic Conference, Touro Infirmary, 11:15 a. m. to 12:15 p. m.
DePaul Sanitarium Staff, 8 p. m.
October 29 L. S. U. Faculty Club, 8 p. m.
New Orleans Hospital Dispensary for Women and Children Staff, 8 p. m.

During the month of September the Society called two special meetings. On September 1st the doctors, dentists, druggists, pharmaceutical representatives and hospital representatives met with the Senators and Representatives of Louisiana and aired the proposed Wagner-Murray Bill, S-1161. On September 20th the general membership of the Society met and outlined a plan of procedure for defeating Senate Bill 1161.

On numerous occasions physicians have trouble with their cars at night, and it is rather difficult to locate a service station that is open. The Society has made inquiries and find that the following stations are open all night and hold themselves in readiness to serve the medical profession: Barcellona's Service Station, 2200 St. Charles Avenue, MAgnolia 1471; Barcellona's Service Station, 2200 Dryades Street, CAnal 2794; Jennsen's Day and Night Auto Wrecker Service, 3139 St. Claude Avenue, FRanklin 3181; and New Orleans Motor Co. Inc., 1801 Canal Street, GAlvez 4141.

The Society has also been informed by Mr. Toye of the Yellow Cab Company that he has instructed the dispatchers to furnish immediately the physicians with cabs when they call in. Mr. Morzloff is the day dispatcher and Mr. Reizer is the night dispatcher. It is hoped that the physicians will not abuse this service.

NEWS ITEMS

Dr. W. R. Buffington was recently elected councilor of the Southern Medical Association.

Dr. Joseph A. Danna was recently elected president of the Associated Catholic Charities. Dr. Leo J. Schoeny was re-elected treasurer of this organization.

Major W. Robyn Hardy was in New Orleans recently on a visit.

Stanley Cohen was recently promoted to the rank of Major. Major Cohen is on foreign service and is chief of medical services of the hospital staff.

Lt. Col. Charles B. Odom has been cited for the Legion of Merit medal as a result of his work with the wounded in the Sicilian campaign.

Capt. Paul L. Marks was recently assigned to foreign duty.

Sherman S. Pinto entered military service during the month of August. He is a Captain in the U. S. Army and is stationed at Brownwood, Texas.

The following letter was sent to the entire membership of the Orleans Parish Medical Society:

September 13, 1943.

Dear Doctor:

No doubt you are familiar with the proposed amendment to the Social Security Act, Senate Bill 1161, which was introduced in the Senate on June 3, 1943 by Senator Wagner for himself and Senator Murray. At the same time Representative Dingell introduced in the House of Representatives an identical measure, H. R. 2861.

Senate bill 1161 is now in the hands of the Committee on Finance of the Senate and is expected to come up for discussion this fall. It is by far the most dangerous proposal, from the standpoint of free economy, that has yet been made.

This proposed legislation provides for the General Welfare, with the Federal government doing the providing. This most recent of the "comfort" measures is designed to remove virtually all the hazards of living. Among other things, it makes provisions for free general medical, special medical, laboratory and hospitalization benefits for more than one hundred and ten million people in the United States. It would place in the hands of one man—the Surgeon General of the Public Health Service—the power and authority to hire doctors and establish rates of pay for doctors; to establish fee schedules for services; to establish qualifications for specialists; to determine the number of individuals for whom any physician may provide service; to determine arbitrarily what hospitals or clinics may provide service for patients. In short, the bill, if enacted into law, would destroy the entire system of American medical care.

The spectre of socialization "a la the German pattern" continues to haunt the land. On the one hand we see a powerful labor union urging public ownership of basic industries, while on the other, public servants are recommending public ownership of the medical profession.

To finance the scheme, Social Security taxes on both employers and employees would be steeply increased. They would go to *6 per cent* of wages up to *$3,000* a year from each of these parties, as against the present *1 per cent* from employees and *4 per cent* from employers. In other words a total of *12 per cent* as against *5 per cent* at the present time. However, federal, state and municipal employees would pay a tax of only *3½ per cent*. Added to the already 20 per cent withholding tax this would amount to a sizeable slice of one's income. The Surgeon General would, therefore, have at his disposal to be used as his judgment dictates, approximately $3,000,000,000 collected annually from

the taxpayer. This is nearly as much as the total cost of maintaining the Federal government each year on the average from 1924-33. We are indeed a sick nation if we are willing to swallow such a pill.

It does not seem possible that free American citizens want a one-man medical system any more than they want a one-man government.

There are two steps to follow at the present time—1. Write your Senators and Congressmen for copies of these bills. Do not discuss the bills, merely ask for copies. 2. Use the accampanying booklet. Have 1, 3, 5, or more of your friends write their Senators and Congressmen for copies of these bills.

During World War I the prohibition law was enforced while a large proportion of our boys were fighting on foreign soil, and unable to express themselves. Now while our boys are again on foreign soil fighting the foes of democracy, there are certain groups who are busily conniving to destroy our democracy. If these groups succeed in their efforts to socialize us, these boys will have fought in vain.

It is a duty which a physician owes to himself, his profession and his colleagues, who are in military service and unable to defend their profession, to take a firm stand to prevent this legislation from being enacted into law, and to abolish any and all future foreign policies such as this from encroaching upon our DEMOCRATIC way of living.

Yours sincerely,

H. B. Alsobrook, M. D.,
President.

HBA:a

P. S. A special meeting of the membership has been called for Monday, September 20th, at 8 p. m., in the Hutchinson Memorial Auditorium, 1430 Tulane Avenue, to outline a plan of procedure to defeat this bill.

Senators:
Allen J. Ellender
John H. Overton

Congressmen:
F. Edward Hebert
Paul H. Maloney

THE SPECIAL MEETING

This special called meeting of the Orleans Parish Medical Society was held Monday, September 20. After several hours of discussion, the following resolution was unanimously adopted. It is earnestly hoped that every parish and district society will likewise hold meetings to condemn this most pernicious bill.

The Resolution

WHEREAS, The proposals of Senate Bill 1161, introduced in the Senate on June 3, 1943 by Senator Robert F. Wagner for himself and Senator James Murray, are of such magnitude and of such sinister menace that, practically, they are incomprehensible to a right thinking American citizen; and

WHEREAS, The processes proposed and the mechanisms indicated are designed to act as the catalyst in transforming a rapidly expanding Federal bureaucracy into an all powerful totalitarian Federal control; and

WHEREAS, Senate Bill 1161 provides, in addition to numerous other measures, designed to remove virtually all the hazards of living, medical and hospital benefits to approximately 110,000,000 persons in the United States, and place in the hands of one man, the Surgeon General of the Public Health Service, the power and authority to hire doctors and establish rates of pay for doctors; establish fee schedules for services; establish qualifications for specialists; determine the number of individuals for whom any physician may provide service; and determine arbitrarily what hospitals or clinics may provide service for patients; and

WHEREAS, An individual will be forced to accept the physician assigned to him, subject to the Surgeon General's selection or discretion, whether the physician is to the patient's liking or not, resulting in a lower grade of medical service and lowering our standards of medical practice—the highest in the world; and

WHEREAS, There are certain groups in Washington who are busily conniving for socialized medicine while a large proportion of the doctors are serving in the armed forces and unable to defend their profession; and

WHEREAS, These groups propose medical experiments for this country, in blissful ignorance of the vast new problem which the medical profession must solve, and fortunately is solving, before there can be any assurance of a healthy America in the future; and

WHEREAS, Prior to the war, medical science had succeeded in making within our continental borders a sort of island of health, and the United States is practically rid of the most deadly maladies—malaria, typhoid, yellow fever, tuberculosis, plague and others too numerous to mention,—are either eliminated or under reassuring control; and

WHEREAS, Records will show that, in every nation where socialized medicine exists, the standard of national health is far below ours, and far less progress is made in fighting and controlling disease; and

WHEREAS, Our present American medical system, which permits an individual to select his own physician and medical service, has worked satisfactorily and has preserved that personal equation between patient and physician, and has produced health, happiness, and longer life for millions of American citizens; therefore be it

RESOLVED, That we, as members of organized medicine in this community and State, oppose any radical schemes, such as the Wagner-Murray Senate Bill 1161, for socializing medicine which, if

passed, would lower the standards of medical practice and the grade of medical service rendered our patients; and

BE IT FURTHER RESOLVED, That we go on record as opposing any other legislation, decree or mandate which will place the medical profession under Federal control and regimentation, denying us and the public the privileges enjoyed under the American system of free enterprise and independence; and

BE IT FURTHER RESOLVED, That a copy of these resolutions be sent to our Senators, Congressmen and to the press, enlisting their support in the defeat of this bill.

—o—

LOUISIANA STATE MEDICAL SOCIETY NEWS

CALENDAR

PARISH AND DISTRICT MEDICAL SOCIETY MEETINGS

Society	Date	Place
East Baton Rouge	Second Wednesday of every month	Baton Rouge
Morehouse	Second Tuesday of every month	Bastrop
Orleans	Second Monday of every month	New Orleans
Ouachita	First Thursday of every month	Monroe
Rapides	First Monday of every month	Alexandria
Sabine	First Wednesday of every month	
Second District	Third Thursday of every month	
Shreveport	First Tuesday of every month	Shreveport

SENATE BILL 1161

On June 3, 1943, Senator Robert F. Wagner, of New York, for himself and Senator James Murray of Montana, introduced in the Senate, Bill 1161.

If the recommendations are enacted into law, they will destroy the private practice of medicine in the United States.

Senate Bill 1161 makes provision for *free* general medical, special medical, laboratory and hospitalization benefits for more than one hundred ten million people in the United States. It proposes placing in the hands of one man, the Surgeon General of the Public Health Service, the power and authority:

1. To hire doctors and establish rates of pay, possibly for all doctors;
2. To establish fee schedules for services;
3. To establish qualifications for specialists;
4. To determine the number of individuals for whom any physician may provide service;
5. To determine arbitrarily what hospitals or clinics may provide service for patients.

The provisions are so sweeping that, if enacted into law, the entire system of American medical care would be destroyed. Immediately following are pertinent paragraphs of the Bill which create the machinery and provide the funds for these truly revolutionary procedures.

The Bill provides for the establishment of a "Unified Social Insurance System." It provides for tax payments from and insurance benefits for: (a) Practically every employed person in the United States; (b) every self-employed person.

It is estimated that these provisions of the Bill would add approximately 25,000,000 persons to the 37,000,000 now carrying social security cards.

The Bill provides (Section 901) that: (a) every insured individual and (b) every dependent entitled to benefits shall be entitled to receive general medical, special medical, laboratory and hospitalization benefits. Initially 30 days of hospitalization is provided. If funds are available this can increased to 90 days each year.

The Bill provides (Section 903):

"(a) The Surgeon General of the Public Health Service is hereby authorized and directed to take all necessary and practical steps to arrange for the availability of the benefits under this title.

"(b) The Surgeon General shall periodically notify the Board of obligations incurred under contracts entered into by him in accordance with the provisions of this section and to whom such obligations obtain. Thereupon, the Board shall authorize and certify disbursements from the Trust Fund to meet such obligations, and such certified disbursements shall be paid from the Trust Fund."

This council has no authority. The Surgeon General selects and appoints the members. It can advise. All authority and power are vested in the Surgeon General. This is the method by which sole responsibility for the medical care and hospitalization of more than 110,000,000 people is placed on one man, the Surgeon General of the Public Health Service. In such manner is created the machinery to place in the hands of one man, the Surgeon General of the Public Health Service, the expenditure of $3,000,000,000 annually.

The Bill, if enacted into law, would provide general medical and special medical care, laboratory tests and hospitalization for approximately one hundred ten million people. The Surgeon General of the Public Health Service is authorized and instructed to make such services available.

After two years of operation, approximately, and presumably after all doctors have been subdued, all hospitals taken over and the state control of medical education has been established, further efforts are to be made.

The Bill provides (Section 912):

"The Surgeon General and the Social Security Board jointly shall have the duty of studying and making recommendations as to the most effective methods of providing dental, nursing, and other needed benefits not already provided under this title, and as to expected costs for such needed benefits and the desirable division of the costs between (1) the financial resources of the social-insurance system and (2) payments to be required of beneficiaries receiving such benefits, and shall make reports with recommendations as to legislation on such benefits not later than two years after the effective date of this title."

The Surgeon General is to find a way to provide Nursing Service and Dental Care.

Under the American system, American medicine and American doctors have developed the most effective and the most widely distributed medical care that has ever been provided for any comparable number of people anywhere at any time.

Free men, with fearless minds, progressively provided a higher and higher quality of medical care. This better and better medical care has been continuously more widely distributed and made more generally available. Many of the great historical killing diseases have been conquered; practically all of the most deadly of the others are being brought under control.

Plans are being made and steps are being taken to bring to every American more effective medicines and medical procedures than were ever before known or imagined.

State medicine, political control of medical service, always has meant, always will mean, for the mass of people medical care through and by physicians who are politically amenable rather than by those with superior abilities and skills.

For the doctor State medicine means abject slavery; the necessity of catering to the ward committeeman or the precinct captain rather than to the needs of the human beings who are his patients.

The doctors of the United States are faced with a real emergency. If they understand—if they are informed—and will inform their legislators and their patients, they will became the final deciding factor in the settlement of the issue.

There are two choices: (1) They can demand a continuation of the practice of medicine under the Christian concept of the sanctity of human personality—the American way—with continuing progress in the science of medicine and the art of medical practice; or (2) they can refuse to be concerned and refuse to assume their part of the responsibility. The result will be the *sacrifice of their medical heritage*, becoming mere pawns of politicans, the forfeiture of self-respect and inevitable deterioation.

The decision means free men or slaves!

Dr. C. C. de Gravelles,
New Iberia.

BI-PARISH MEDICAL SOCIETY

The Bi-Parish Medical Society met with Dr. Glenn J. Smith and Staff in the East Louisiana State Hospital. After a bounteous repast prepared by Miss Corey and assistants, the Society adjourned to the staff room for the Scientific and Business Program.

Dr. W. A. Sorrenson of Jackson, La. and Drs. Mary R. Niebergall and P. A. Niebergall were elected members of our Society. The Scientific program was presented by Drs. Wilkinson, Smith and Robards, who demonstrated with patients different phases of insanity. This presentation was appreciated by all present.

The Society adjourned to meet with Dr. M. A. Walker and Staff at Angola, Louisiana in the State Penitentiary Hospital the first Wednesday in December at 5 p. m.

Dr. G. J. Smith, Pres.
Dr. E. M. Toler, Secy.

NEWS ITEMS

The Tulane University Medical School Base Hospital No. 24, after thirteen months at Fort Benning, sailed from New York and have now arrived in North Africa. Lt. Colonel Mims Gage was detached from the Unit and made surgical consultant for the Fourth Service Command. Lt. Colonel Roy Turner was also detached and put in charge of medical service at the Lawson General Hospital.

The University of Louisiana Medical Center Base Hospital No. 64, after being mobilized for many months in this country, has been reported as arriving in North Africa.

Lt. Colonel Charles B. Odom, who for some years was resident surgeon at the Charity Hospital, New Orleans, is now attached as special surgeon to the Staff of Lt. General George Patton. He recently was cited for the Legion of Merit medal as a result of his activities in the Sicilian campaign. Colonel Odom was originally with the Louisiana State University Unit, but was detached and eventually obtained his present position.

The Association of Military Surgeons of the United States will meet in Philadelphia, October 21-23. Lt. General Sir Alexander Hood, director general of the British Army Medical Services, will be in attendance, together with the director general of the Royal Canadian Army and many other distinguished medical officers of the Allied Forces.

The 75th Liberty ship built by the Delta Shipbuilding Company was given the name of Joseph Goldberger. Dr. Goldberger's outstanding and trail blazing work in the field of nutrition thus receives further recognition. Dr. Goldberger married a New Orleans woman, and his son, Dr. Joseph Herman Goldberger, who is now in El Reno, Oklahoma, graduated from Tulane University in 1935.

AMERICAN BOARD OF OBSTETRICS

The next written examination and review of case histories (Part I) for all candidates will be held in various cities of the United States and Canada on Saturday, February 12, 1944 at 2:00 p. m. Candidates who successfully complete the Part I examination proceed automatically to the Part II examination held later in the year. All applications must be in the office of the Secretary by November 15, 1943.

NEW DIRECTOR OF THE CHILD GUIDANCE CENTER

Rabbi Emil Leipziger, president of the board of the Child Guidance Center, has announced the appointment of Dr. Milton Kirkpatrick as executive director of this organization. Dr. Kirkpatrick is a psychiatrist who has been interested for many years with problems of childhood maladjustment. Prior to his accepting this position in New Orleans, he was director of the division on community clinics of the National Committee for Mental Hygiene. At one time he was psychiatrist for the juvenile court in Cleveland; he held a Rockefeller Foundation fellowship at the Institute of Child Guidance in New York; he was a member of the American Psychiatrist Association, and he is a diplomat of the American Board of Neurology and Psychiatry.

Dr. Kirkpatrick succeeds Dr. Martha MacDonald who has accepted a position in the Children's Bureau in Washington. The board of the Child Guidance Center is particularly fortunate in having obtained the services of a nationally known psychiatrist and one who has been interested in child psychiatry for many years.

UNITED STATES PUBLIC HEALTH SERVICE

P. A. Surgeon Robert C. Morrey has been relieved from duty in New Orleans and sent to Washington, D. C. P. A. Surgeon David B. Wilson has been relieved from duty in Jackson, Miss. and ordered to Public Health Service District No. 4 in New Orleans. Asst. Surgeon William D. Brand, Asst. Surgeon W. L. Bunch, Asst. Surgeon John K. McBane, and Asst. Surgeon D. W. Slagle have been ordered to Marine Hospital, New Orleans. P. A. Surgeon H. J. Nagler has been ordered from New Orleans, to Mobile, Ala.

REPORTED CASES OF SYPHILIS UP 21 PER CENT

An increase of 21 per cent in number of persons with syphilis reported as seeking treatment in fiscal 1943 as compared with fiscal '42 is indicated in reports of State and Territorial health departments, according to an estimate for the whole of fiscal '43 based upon the first six months of the year. Both doctors and clinics participated in the reported increase; physicians reported 212,000 cases (36,000 more than 1941, last peacetime year) while clinics reported about 378,000 (60,000 more than 1941). Considerable part of the increase in reported cases arises from cases uncovered and brought to treatment as a result of routine blood tests made by Selective Service and as a part of premarital and prenatal examinations. Serologic tests have increased by 53 per cent as a result of these mass testing programs. Reports of the States on gonorrhea indicate almost 300,000 new cases reported for fiscal '43, an increase of 28.3 per cent over fiscal '42. Tests increased 10 per cent and distribution of sulfonamide tablets almost 70 per cent. (V. D. War Letter, Aug. 31, 1943).

PEGLER SAYS

In a recent column in the New Orleans States, Westbrook Pegler discussing vitamins paid indirect tribute to the physician:

"People must be buying them (vitamins) in enormous quantities and in their various guises or the promoters would not have the money to maintain the propaganda, but I think you will agree that there has been no perceptible reinvigoration of the whole public and I dare say that we should not be perceptibly worse off for their total repudiation *except under the doctor's orders.*

"There is also an insistent appeal to all of us to dope ourselves with certain cures for the headache which is not an illness of itself but a symptom, usually to be endured briefly and cured by natural processes, or otherwise, *to be investigated by a physician.*"

SHORTAGE OF NURSES

The attached statement has been issued by the Directing Board of War Manpower Commission's Procurement and Assignment Service for Physicians, Dentists, Veterinarians, Sanitary Engineers, and Nurses. The Directing Board would appreciate your cooperation in calling to the attention of members of your profession the important problems discussed in the statement.

A critical shortage of nurses exists. Here are the facts:

Over 36,000 nurses are now with the armed forces and the Red Cross has accepted responsibility for the recruitment of an equal number by June 30, 1944. Our men are receiving skilled medical care of a high order as shown by the high percentage of

recovery from injury. Skilled nursing is an important factor in such care. Then, too, the very presence of nurses near the bases of military operations has repeatedly been described as a potent force in maintaining morale.

There has been an unprecedented increase in the use of civilian hospitals. Hospitals gave fourteen and a quarter million more days of care in 1942 than in the preceding year and the trend still is definitely upward. This is in keeping with the rapid growth of the Blue Cross (group hospitalization) plans and the Children's Bureau hospitalization program for the care of the families of service men.

Nursing is essential to the nation's health. The National Nursing Inventories (of nursing resources) of 1941 and 1943, by the U. S. Public Health Service, offer a comparison of data for the two years.

TABLE I
NATIONAL NURSING INVENTORIES

	1941	1943
Total returns	289,286	259,174
Active		
Institutional	81,708	77,704
Public Health	17,766	18,900
Industrial	5,512	11,220
Private duty	46,793	44,299
Other	21,276	18,476
Inactive but available for nursing	25,252	38,746 (of these 23,576 are married and under 40)
Inactive, not available	90,979	49,829
In Nurse Corps of Army and Navy	6,371	over 36,000 (precise data not available)

The total number of nurses graduated in the two years is well in excess of the number withdrawn for military service; this fact is not apparent in the inventory. The returns are apparently incomplete. Active nurses who did not return their questionnaires apparently did not realize the profound importance of the information requested. This information is the basis for present planning and safeguarding the future.

The relatively small decrease in the number of institutional nurses is much less significant than the increased use of hospitals in creating the serious shortage of nurses. The increased number of nurses in industrial nursing is, of course, not surprising.

Here is the program of the new Nursing Division of the Procurement and Assignment Service. The Red Cross recruitment committee are pledged to recruit 36,000 nurses this year. The new division will (1) determine the availability for military service or essentiality for civilian service of all nurses eligible for military service and submit such determinations to the American Red Cross for use in procurement of nurses for the Armed Forces; (2) promote plans for maximum utilization of full-time nurses and those who are able to serve only part time; (3) develop and maintain a roster of all graduate registered nurses, and (4) develop and encourage sound methods of supplementing the work of nurses with non-professional personnel.

Through the War Manpower Commission, nursing will not only have the benefit of the experience of medicine in the procurement and assignment of physicians, but means will be found to interpret wartime nursing to physicians and their cooperation secured in effecting desirable wartime adjustments.

INFECTIOUS DISEASES IN LOUISIANA

For the week ending August 7, pulmonary tuberculosis was the only disease that occurred in numbers greater than 10 which were listed in the Weekly Morbidity Report for the State of Louisiana. There were 49 such cases reported. Of the rarer conditions, four cases of poliomyelitis were reported, two from Caddo and two from Orleans Parish. Six cases of typhus fever were listed for this week. The following week which ended August 14 there were recorded 47 cases of pulmonary tuberculosis, 16 of bacillary dysentery, 13 each of mumps and whooping cough, 11 of malaria. Seven cases of poliomyelitis were listed this week, all from the northern part of the state. Eight cases of diphtheria were likewise listed. Listed among "other diseases" were 23 cases of unclassified pneumonia. For the week which came to an end August 21, 69 cases of pulmonary tuberculosis were listed, 22 of measles and 10 of diphtheria. This week six cases of poliomyelitis were listed and six of typhus fever. For the week of August 28, the monthly report of venereal diseases appeared. For the month there were reported 361 cases of syphilis, 507 of gonorrhea, 16 of lymphopathia venereum, and 76 of chancroid. Other diseases occurring in numbers greater than 10 include 27 cases of pulmonary tuberculosis, 13 of bacillary dysentery, and 10 of malaria. Only two cases of polio were reported this week. For the week which closed September 4 apparently there was an epidemic of food poisoning, because 150 cases were listed. There were also 36 cases of pulmonary tuberculosis. Only one instance of poliomyelitis was recorded and three of typhus fever in this particular week.

HEALTH OF NEW ORLEANS

The Bureau of the Census, Department of Commerce, reports that for the week ending August 7 there were 139 deaths in the City of New Orleans as contrasted with 161 the previous week. These deaths were divided 88 white, "all others" 51. For

the week which ended August 14 there were 143 deaths, 100 white, 43 all others, with 18 of the deaths occurring in children under one year of age. The week ending August 28 found 150 people dying in the city, 104 of whom were white and 11 of whom were children. This is somewhat above the three year average for the corresponding week. For the week which ended on September 4 there were 145 deaths, apportioned 88 white, 57 all others, with only 8 deaths in children under one year of age. This death rate is somewhat higher than usual, the three year average for this corresponding week being only 109.

THEY BUILT THE SOUTH*

Historians often err in overemphasizing the importance of statesmen and soldiers to the progress of mankind. Doctors have done as much for the development of Louisiana as politicians. In conquering tropical diseases, Louisiana first became liveable and affluent.

In that select company of physicians, Dr. Stanford E. Chaille is included. He was born in Natchez, July 9, 1830, the only child of William Hamilton and Mary Stanford Chaille.

DR. STANFORD EMERSON CHAILLE

As early as 1396 and for many years thereafter the Chaille family provided Portiers, France, with leaders and officials. In 1650 one branch of this ancient Catholic family became Hugenots, and Pierre Chaille, during a period of religious persecution, escaped to England and then migrated to Boston. Pierre's son, Moses, settled in Maryland and to Moses, Stanford Chaille traced his ancestry. Three of Dr. Chaille's four great-grandfathers were soldiers in the war for independence. His father and mother were born in Maryland and emigrated to Natchez in 1819. His father died when he was six and his mother when he was 14.

Stanford, an only child, was educated under private tutors until his mother's death. She appointed as her son's guardian, Hubbard Emerson of Massachusetts, her husband's closest friend and her son's godfather.

Studied Abroad

Stanford made his home with his guardian who became his second father. He entered Philadelphia academy at South Andover and upon his graduation became a student at Harvard college, receiving the degree of A. B. in 1851. He began the study of medicine at the University of Louisiana (now Tulane) in 1851, graduated in 1853 and returned to Harvard to receive his M. A. degree in 1854.

During his studies at Tulane, Dr. Chaille was resident student in the New Orleans hospital and resident physician at the United States Marine hospital. He served as physician to the Circus (Rampart Street Infirmary), for many years was coeditor of the New Orleans Medical and Surgical Journal and demonstrator of anatomy at Tulane. In 1850 he was a student in Paris in the laboratory of Claude Bernard, world-famous physiologist. He renewed his studies in Paris in 1866.

Dr. Chaille was twice married, in 1857 to Laura E. Mountfort, who died a year later leaving one daughter, Mary Laura; in 1863 to Mary Louise Napier of Macon, Ga., who died in 1873.

During the War Between the States, Dr. Chaille volunteered as a private of the New Orleans Light Horse. He became acting surgeon general of Louisiana, surgeon and medical inspector of the Army of Tennessee on the staff of General Braxton Bragg and surgeon in charge of army hospitals in Atlanta. He was captured in 1865, paroled and returned to New Orleans, to resume his old duties at the university where he also served as lecturer on obstetrics and professor of physiology and pathological anatomy.

Appointed Dean

In 1878, Dr. Chaille was chosen to deliver one of the 10 addresses on medical jurisprudence before the International Medical Congress in Philadelphia. He was appointed by the United States Congress as one of 12 experts to investigate the yellow fever epidemic of 1878 and was later chosen president of the Havana yellow fever commission. He was commissioned civilian member of the national board of health in 1885 by President Chester A. Arthur and continued to serve in that capacity until the commission was abolished by Congress in 1893.

He was chosen dean of the medical department of Tulane university in 1885 and professor of physiology, hygiene and pathological anatomy in 1889. He represented Louisiana on a committee that organized the Pan-American Medical Congress in 1891.

Dr. Chaille's contributions to medical literature were voluminous.

He was the physician and confidant of Jefferson Davis, his most honored friend in prosperity and adversity. He attended the Confederate president in last illness in 1889.

Dr. Chaille was a thorough student of yellow fever epidemics from 1850 until his death, May 27, 1911. As chairman of the committee on state medicine in the Louisiana State Medical Society he was largely responsible for changes in the Louisiana Constitution of 1879 that authorized state medicine.

*Republished through the courtesy of Mr. Clayton Rand and the Times Picayune.

DR. HECTOR E. BERNADAS

(1879 - 1943)

One of the most popular and best liked members of the State Society died rather suddenly in New Orleans on September 22. Dr. Bernadas had been sick for several years, but was up and about and leading a somewhat restricted life. His death was totally unexpected.

Dr. Bernadas has been one of the most active workers in organized medicine in the state. He was at one time vice-president of the Orleans Parish Medical Society and was president of that organization in 1919 and 1920. Dr. Bernadas was first elected a delegate to the State Medical Society in 1917 and held office continually until his death. For three years he was chairman of the House of Delegates. He was elected councilor of the First District in 1925, which position he occupied at the time of his demise, and was Chairman of the Council from 1926 on.

The Parish and State Medical Societies lose one of their most illustrious workers in the passing of this splendid character. In addition to his loss to organized medicine, Dr. Bernadas leaves behind him a host of good friends and grateful patients.

DR. RUFUS E. APPLEWHITE

(1880 - 1943)

Dr. Rufus E. Applewhite of Winnsboro was born in Tylertown, Mississippi in 1887. He attended Mississippi State University, and graduated in medicine from the Memphis Hospital Medical College in 1913. He later took up post-graduate work at Tulane University. He did private practice in Watson, Arkansas until 1928, when he accepted a position as Public Health doctor of Franklin Parish. At the time of his death, on May 3, 1943, Dr. Applewhite was Secretary-Treasurer of the Franklin Parish Medical Society.

DR. HENRY LARKIN GREEN

(1880-1943)

Dr. Henry L. Green was born in Oakland, Louisiana in 1880. His preliminary education was received at the public schools in Union Parish and Mt. Lebanon College in Bienville Parish. He received his B. S. degree from Louisiana State University in 1906 and graduated in medicine in 1914 from the University of Pennsylvania. He interned at the Chestnut Hill Hospital in Philadelphia. Dr. Green has practiced in Shreveport since his internship and specialized in internal medicine. He was on the staff of the Tri-State Hospital and was a medical examiner for the draft board. Dr. Green was a member of the Louisiana State Medical Society since 1917, and died in Shreveport on June 22, 1943.

DR. D. FREDERICK WAIDE

(1883 - 1943)

Dr. D. Frederick Waide was born in Nicholasville, Kentucky in 1883. He graduated in medicine from the University of Louisville in 1908, and did postgraduate work at Tulane University. At the time of his death on September 14, 1943, he was Secretary-Treasurer of the Second District Medical Society.

WOMAN'S AUXILIARY

The following are the officers of the Woman's Auxiliary to the Louisiana State Medical Society for 1943-1944:

Officers

President—Mrs. George J. Taquino, 18 Fontainbleau Drive, New Orleans.

President-elect—Mrs. Rhodes Spedale, Plaquemine.

First Vice-President—Mrs. W. R. Harwell, 715 Elmwood, Shreveport.

Second Vice-President—Mrs. A. D. Tisdale, Riverside Sanitarium, Monroe.

Third Vice-President—Mrs. D. B. Barber, Pineville.

Fourth Vice-President—Mrs. Thos. Richardson, Minden.

Treasurer—Mrs. Paul Lacroix, 3122 State Street Drive, New Orleans.

Recording Secretary—Mrs. E. Ellender, Houma.

Corresponding Secretary—Mrs. Waldemar Metz, 2437 Jefferson Avenue, New Orleans.

Chairmen of Standing Committees

Archives—Mrs. Jerome E. Landry, 2336 Milan Street, New Orleans.

Bulletin—Mrs. Cassius L. Peacock, 8415 S. Claiborne Avenue, New Orleans.

Cancer Control—Mrs. Edmond Souchon, 3136 Octavia Street, New Orleans.

Doctor's Day—Mrs. C. R. Gowen, 5900 Line Avenue, Shreveport.

Entertainment for Men in Service—Mrs. Arthur D. Long, Jr., 1367 Steele Blvd., Baton Rouge.

Exhibits—Mrs. Donovan C. Browne, 4920 St. Charles Avenue, New Orleans.

Finance—Mrs. Carl Young, 1811 Jahncke Avenue, Covington.

Historian—Mrs. Edward C. Melton, Plaquemine.

Hygeia—Mrs. Robt. W. O'Donnell, 117 Stone Avenue, Monroe.

Indigent Widows—Mrs. Aynaud Hebert, 2013 Napoleon Avenue, New Orleans.

Organization—Mrs. B. C. Garrett, 4700 Fairfield, Shreveport.

Parliamentarian—Mrs. M. H. Foster, 1316 Albert, Alexandria.

Press and Publicity — Mrs. M. C. Wiginton, Hammond.

Printing—Mrs. Willard Wirth, 402 Vincent Avenue, New Orleans.

Program—Mrs. DeWitt Milam, 1704 Island Drive, Monroe.

Public Relations—Mrs. John S. Dunn, 8410 Pontchartrain Blvd., New Orleans.

Red Cross—Mrs. Clarence B. Erickson, 423 Herndon Avenue, Shreveport.

Revision of By-Laws—Mrs. C. Grenes Cole, 4938 St. Charles Avenue, New Orleans.

Councilors

First District—Mrs. Daniel J. Murphy, 127 S. Solomon Street, New Orleans.

Second District—Mrs. Daniel N. Silverman, 47 Versailles Blvd., New Orleans.

Third District—Mrs. C. C. deGravelles, New Iberia.

Fourth District—Mrs. R. T. Lucas, 535 Perremont Road, Shreveport.

Fifth District—Mrs. A. G. McHenry, 1910 Riverside Drive, Monroe.

Sixth District—Mrs. A. W. Martin, 902 Virginia Avenue, Bogalusa.

Seventh District—Mrs. J. D. Frazar, DeRidder.

Eighth District—Mrs. H. O. Barker, Horse Shoe Drive, Alexandria.

OUACHITA PARISH MEDICAL SOCIETY

Seated at a beautifully appointed table, fragrant with clematis overflowing from an immense crystal bowl, members of the Women's Auxiliary to the Ouachita Parish Medical society met for luncheon in the Butterfly room of the Frances Hotel last week following a period of inactivity.

Mrs. P. L. Perot, the president, presided and introduced the speaker, Mrs. Clifford Johnson who read an excellent article on "Doctors' Wives Organize for War Service."

The new officers were all present on this occasion and were introduced as follows: President elect, Mrs. A. B. Gregory; first vice-president, Mrs. F. C. Bennett; second vice-president, Mrs. D. M. Moore; treasurer, Mrs. A. D. Tisdale; recording secretary, Mrs. H. V. Collins; corresponding secretary, Mrs. I. J. Wolff; publicity, Mrs. W. L. Bendel; historian, Mrs. J. E. Walsworth; parliamentarian, Mrs. R. W. O'Donnell.

Those present were: Mesdames Prentice Gray, J. B. Vaughan, K. W. Brown, R. W. O'Donnell, A. G. McHenry, Marvin Meengs, DeWitt Milam, Wyatt C. Simpson, A. H. Cannon, S. W. Shelton, Clifford U. Johnson, Lenard L. Shlenker, Henry E. Guerriero, A. D. Tisdale, J. Q. Graves, P. L. Perot, H. V. Collins, F. C. Bennett, G. A. Varino, John Pracher, G. T. Gallaspy, A. L. Peters, A. B. Gregory, C. P. Gray, Sr., D. M. Moore, and W. L. Bendel.

I was disappointed not to have had anything for the Journal last month but due to the inactivity of the Auxiliaries during the summer months there was nothing to report.

Just having returned from a trip east where I have been for the past month attending special clinics, along with the Doctor, I had the privilege of meeting a number of doctors' wives from all over the country and even though they are not active in Auxiliary work, due to their moving around so frequently, they are doing a great amount of work in various Red Cross and defense organizations. We want them to know how proud we are of them and of the work they are doing and the cheerful manner in which they are carrying on under many obstacles and inconveniences. We, who are left behind, shall endeavor to do our part in the same way and with more determination than ever to keep our Auxiliary functioning in such a way that they too can be proud of us.

With each one of us assuming our full responsibility, concientiously, it can—and will be done.

Mrs. Marquis C. Wiginton,
Publicity Chairman.

BOOK REVIEWS

Allergy Anaphylaxis and Immunotherapy: By Bret Ratner, M. D. Baltimore, The Williams & Wilkins Company, 1943. Pp. 334. Price, $8.50.

Clinically, the responses of immunity and hypersensitiveness appear to be sharply delimited the one from the other. In point of fact an infinity of gradations is present linking these two extremes hence a book dealing with allergy and immunotherapy is perfectly logical.

The first section of the book deals with the principles and practice of immunotherapy. A complete description is given of the materials used in diagnosis, prophylaxis and therapy of infectious diseases; agents are then considered in a wealth of practical clinical detail.

Far and away the most comprehensive survey of serum disease the reviewer has seen is to be found in the second portion of the book which deals with allergy to immunotherapeutic agents. One would not have believed it possible for 145 pages of care-

fully thought out text to be devoted to this topic. This portion of the book has chapters on reactions from blood transfusions and on drug allergy. A brilliant survey of the physiological pathology of the allergic state closes the book.

This text should have its greatest appeal to those who treat infectious disease but it can be highly recommended to the allergist as well.

VINCENT J. DERBES, M. D.

Blood Groups and Transfusion: By Alexander S. Wiener, A. B., M. D., 3d ed. Springfield, Illinois, Charles C. Thomas, 1943. Pp. 438, illus. Price, $7.50.

This book has been brought up-to-date and the author has well summarized our knowledge concerning the theories, technics of blood grouping, technics of transfusion, and has assembled the essential facts concerning the transfusion of whole blood, plasma, and serum.

In this edition two new chapters have been added; one dealing with the transfusion of stored blood and blood substitutes, and the other with the recent discovered Rh factor and its role in erythroblastosis fetalis.

Since the book has been brought up-to-date and the subject presented in such a way that it is readable to those unacquainted with the subject it should be added to the increasing reference reading list.

REYNOLD PATZER, M. D.

Textbook of Gynecology: By Arthur Hale Curtis, M. D. 4th ed. reset. Philadelphia, W. B. Saunders Co., 1942. Pp. 720, illus. Price, $8.00

The fourth edition of Curtis' Gynecology has been completely reset. Many changes and rearrangements have been made.

The chapter on pelvic and peroneal anatomy has been elaborated upon. The chapter on gonorrhea has been largely rewritten to include newer methods of culture of gonococci and revolutionized therapy with sulfa drugs.

A great deal has been added to the chapter on uterine myoma and the chapter on carcinoma of the cervix more clarified and simplified. The section on ovarian tumors has been completely reset.

The text is beautifully and clearly illustrated, particularly the illustrations of the technic of radical operations.

ADOLPH JACOBS, M. D.

An Atlas of the Basal Ganglia, Brain Stem and Spinal Cord: By Henry Alsop Riley, M. A., M. D. Baltimore, The Williams & Wilkins Company, 1943, pp. xi + 708; plates 259. Price, $13.50.

This atlas is a collection of fully labeled photographs of Weigert-stained sections of the spinal cord and brain. The original preparations are of exceptionally fine quality, and both the photography and photo-engraving process have done justice to them. Most of the plates measure about 7½x9½ inches, the photographs having been made at enlargements sufficiently great to bring out all the features of interest in preparation of this character. In addition to the more accustomed transverse sections, horizontal and sagittal sections of the brain are included. Key plates, photographs of the gross specimens marked by lines indicating levels, supply a helpful guide to orientation of the brain sections. Each plate is labeled by lettering overlaid on the indicated structures, the lettering being an ingeniously abbreviated code to the names, as listed on a facing page. An alphabetical "List of structures," arranged according to the abbreviations used in labels, covers 171 pages. In this list the structures are concisely characterized. The volume concludes with a bibliography of six pages.

HAROLD CUMMINS, Ph. D.

Human Neuroanatomy: By Oliver S. Strong and Adolph Elwyn. Baltimore, The Williams & Wilkins Company, 1943. Pp. x + 417; figs. 320. Price, $6.00.

It is a significant indication of the status of neuroanatomical text-books that the present volume is the fourth new text on the central nervous system to appear within about a year. This demand is evidently created by lack of general satisfaction with texts in the field. Students face major difficulties in their efforts to gain a working knowledge of the subject; the time that can be devoted to it is short; the subject matter, even when reduced to essentials, is intricate. The success of a text-book can be measured only by actual trial, to determine how effectively it helps the student through these difficulties. An examination of Strong and Elwyn's text suggests that it is at least as promising as others now available. Only use in the hands of students can show whether the book is superior.

The long teaching experience of the authors places them in a favorable position to become acquainted with the needs of subject matter and methods of presentation adapted "to give the student and physician a thorough and clear presentation of the structural mechanisms of the human nervous system together with some understanding of their functional and clinical significance."

The first seven chapters are devoted to basic structural and functional considerations, largely in relation to individual neurones and the supporting tissues. Chapter VIII deals with meninges and cerebrospinal fluid. Chapter IX is a description of the gross and minute anatomy of the spinal cord, and Chapter X considers its fiber tracts. Chapter XI is a description of the peripheral portions of the autonomic system. Chapter XII is a general description of the brain; the succeeding eight chapters are devoted to detailed descriptions of the brain components—a chapter each on medulla, pons, mesencephalon, cerebellum, diencephalon and striate body, cerebral hemispheres, cerebral cortex, blood supply of brain. The illustra-

tions are well chosen and instructively designed. The style is clear and direct. Functional aspects are emphasized, though from this standpoint the organization of subject matter is at some points unfortunate; for example, spinal tracts are presented in detail before the reader has gained information of their significance as links in functional pathways.

HAROLD CUMMINS, Ph. D.

Physiology in Aviation: By Chalmers L. Gemill, B. S., M. D. Springfield, ill., Charles C. Thomas, 1943. Pp. 129. Price, $2.00.

This small handbook contains the material covering the Lectures in Physiology given in the School of Aviation Medicine, Naval Air Station, Pensacola, Florida. It is, in general, an excellent, short account of the physiology of respiration and circulation and the effects of altitude and flying on these systems Chapters on the temperature control of the body and the physiology of muscular exercise, as well as a particularly fine discussion of instrument flight, are also included.

By way of minor criticism, it would seem that the chemoreceptors of the aortic bodies should have been included in the discussion of the chemical control of respiration, in addition to the cartoid bodies. The second paragraph on page 69 contains conflicting statements as to the barometric pressure at 34,000 feet.

HYMEN S. MAYERSON, Ph. D.

Diseases of the Nose, Throat and Ear: By William Lincoln Ballenger, M. D., F. A. C. S. and Howard Charles Ballenger, M. D., F. A. C. S. 8th ed. rev. Philadelphia, Lea & Febiger, 1943. Pp. 975, illus. Price, $12.00.

A revision of the old Ballenger with elimination of the obsolete and addition of the newer methods and technics again makes this eighth edition a most valuable asset for the otolaryngological student.

Various chapters have been contributed by different authors who excell in their particular subjects, adding much to the value of this work.

Unfortunately, however, gross errors occasionally occur in work of this magnitude which may be of considerable significance. Such an error has been made in describing the technic of the Lynch frontal operation.

The erroneous statement is made that in the Lynch operation the periosteum over the frontal plate of the frontal bone is elevated. If this description is followed by the uninitiated, the final results will be very disappointing. One wonders if many other errors or mis-statements are included in the remainder of the text.

F. E. LEJEUNE, M. D.

A Manual of Otology, Rhinology, and Laryngology: By Howard Charles Ballenger, M. D., F. A. C. S. 2d ed. enl. & rev. Philadelphia, Lea & Febiger, 1943. Pp. 334, illus. Price, $4.00.

This book has always been held in high esteem. It is a very valuable outline of ear, nose and throat diseases.

This second edition is as concise as the first and differs only slightly from it. New conditions, as aviation sinusitis, have been added. Newer treatments of old conditions, as the oily estrogenic solution for chronic atrophic rhinitis, have also been included.

The chapters on foreign bodies in the air passages, and that on the indications and the technic of tracheotomy are the most radical changes in the book.

JEANNE ROELING-HENLEY, M. D.

Whooping Cough: By Joseph H. Lapin, B. Chem., M. D. Springfield, Illinois, Charles C. Thomas, 1943. Pp. 237. Price, $4.50.

The work is well organized, up-to-date, and contains chapters on epidemiology, bacteriology, pathology, immunology, serology, clinical manifestations, hematology, roentgenology, complications, diagnosis, prophylaxis of contacts, specific treatment, non-specific treatment, treatment of complications and public health considerations. Such a volume should certainly be a welcome addition to the library of any physician dealing with pertussis!

Lack of agreement between various serologic tests and observed clinical immunity is properly emphasized in the section on "specific treatment"; claims and counterclaims appearing in the sections on "Immunology" and "Serology" deserve this same emphasis and qualification to justify the confusion arising so naturally in a review of such controversial opinions.

Sympathy is due the author for facing the ordeal of attempting to review comprehensively such a confusing and often contradictory literature as that dealing with this disease. It would seem that the work should have included more of the author's own short *"discussions"*, in which he sums up, arbitrates, and attempts to rationalize widely divergent opinions.

The final chapter sets forth commendable public health recommendations; though these are probably too elaborate for complete adoption at the present time, they should certainly serve well as an authoritative basic guide for officials beset with increased hazards in the control of this disease in our overcrowded defense areas, and the consequent urgent need for revision of our present inadequate regulations.

R. V. PLATOU, M. D.

War Injuries of the Chest: Edited by H. Morriston Davies, M. Ch., F. R. C. S. and Robert Coope, M. D., F. R. C. P. Edinburgh, E. and S. Livingstone, 1942. Pp. 131. Price, $2.25.

This short monograph is a splendid resumé of war injuries. It is profusely illustrated and is

very sound from the standpoint of clinical manifestations and treatment. It is unfortunate that in such a splendid book that chloroform is spoken of as a possible anesthetic agent even though it is stressed that "its toxicity demands that it be used with extreme care." The book is, however, extremely compact and not the least of its virtues is the fact that it is small and has a flexible binding which would make it possible to carry it in one's pocket without any difficulty.

ALTON OCHSNER, M. D.

Principles of Extra-Peritoneal Caesarean Section: By James F. Ricci, A. B., M. D., and James Pratt Marr, M. D., F. A. C. S. Philadelphia, Blakiston Co, 1942. Pp. 224. Price, $4.50.

This book covers in a compact and concise way the history and development of the various forms of extra-peritoneal caesarean section and should serve as a ready reference for any information on this subject if same is desired

The author's careful discussion of the anatomy and histology of the isthmus and the lower segment is complete and gives the reader an accurate understanding of the structures encountered in performing this operation. The careful presentation of the anatomy and histology of the fascia and its relationship to the bladder, lower segments, and peritoneum should be of great service to the surgeon who does this type of work.

The various types of extra-peritoneal caesareans and technics are enumerated in a complete and careful manner.

This book should be of much service to the obstetrician who does surgery, or as a ready reference book for statistical data.

WILLIAM D. PHILLIPS, M. D.

Sulfonamide Compounds in the Treatment of Infections: By Maurice A. Schnitker, M. D. New York, Oxford University Press, 1942. Pp. 195. Price, $2.00.

The presentation of the present concepts of the clinical use of sulfonamides is discussed in a clear and concise manner. This has been accomplished by the author's restricting the discussions to the clinical application, referring to laboratory in vivo and in vitro experiments only when there is doubt as to its value in the treatment of certain bacterial infections.

The sulfonamides are discussed separately. Under each subject the authors discuss methods of administration, the clinical uses of each of the sulfa drugs. In these sections stress is laid on the infections in which each drug exerts its most specific action, as well as those infections in which the efficacy of the drugs is doubtful. These infections are given in the form of tables, which are very inclusive. There is no question that there is a difference of opinion as to the efficacy of these drugs in certain infections. This has arisen from the confusion of reports, many of which are from poorly controlled and poorly conceived experiments. However, the author does give the prevailing concensus of opinion of the action of these drugs in the different infections.

The first chapters present in a very concise manner the important facts dealing with the history of the development of these drugs, their chemistry, methods of assaying the efficacy of the drugs, a discussion of their pharmacological actions, and a discussion of the most plausible theories of the mode of action of these drugs. Only the important features of each of these points are brought out. This should simplify and clarify these confusing issues for the average reader. For those who wish to delve further into the mysteries of these drugs, the bibliography which is included will be of value.

The value of any book on the use of sulfonamides will depend entirely on a conservative attitude of the author. Many of the preceding treatises on the same subject have been written by investigators who in their desire to present their knowledge have permitted their enthusiasm to outrun their better judgment. Many of the claims made by these authors have had to be modified or retracted. I do not feel that the present treatise under discussion is as guilty of this as have been other similar books on the same subjects.

In my opinion this book will be a valuable adjunct to have in the library. The students should be able to read this book intelligently and to great advantage. As a guide to therapy it will contain sufficient information to be of value to the therapeutic doctor. For those who care to delve into the mysteries of these drugs, this book would prove valuable as a starting reference for the more detailed investigations which would follow. I think this book would be of value if starred as one of the preferred articles on the student's reading list.

ALFRED B. LONGACRE, M. D.

PUBLICATIONS RECEIVED

C. V. Mosby Company, St. Louis: Reconstructive Surgery of the Eyelids, by Wendell L. Hughes, M. D., F. A. C. S.

Paul B. Hoeber, Inc., New York and London: Nervousness, Indigestion, and Pain, by Walter C. Alvarez, M. D.

Cornell University Press, Ithaca, New York: Virus Diseases, by Members of the Rockefeller Institute for Medical Research.

Comstock Publishing Company, Inc., Ithaca, New York: The Infectious Diseases of Domestic Animals with Special Reference to Etiology, Diagnosis, and Biologic Therapy, by William Arthur Hagan, D. V. M., D. Sc.